

APPENDIX A

**AIR QUALITY AND GREENHOUSE GAS
EMISSIONS IMPACT ASSESSMENT**



Technical Memorandum

TO: Kim Quinn
POWER Engineers, Inc.

FROM: Terry A. Hayes Associates Inc.

DATE: November 4, 2019

RE: **Rosamond Switching Station Project – Air Quality and Greenhouse Gas Emissions
Impacts Assessment**

Introduction

Terry A. Hayes Associates Inc. (TAHA) has completed an Air Quality and Greenhouse Gas (GHG) impact assessments for the Rosamond Switching Station Project (proposed Project) in accordance with the provisions of the California Environmental Quality Act (CEQA) Statutes and Guidelines.

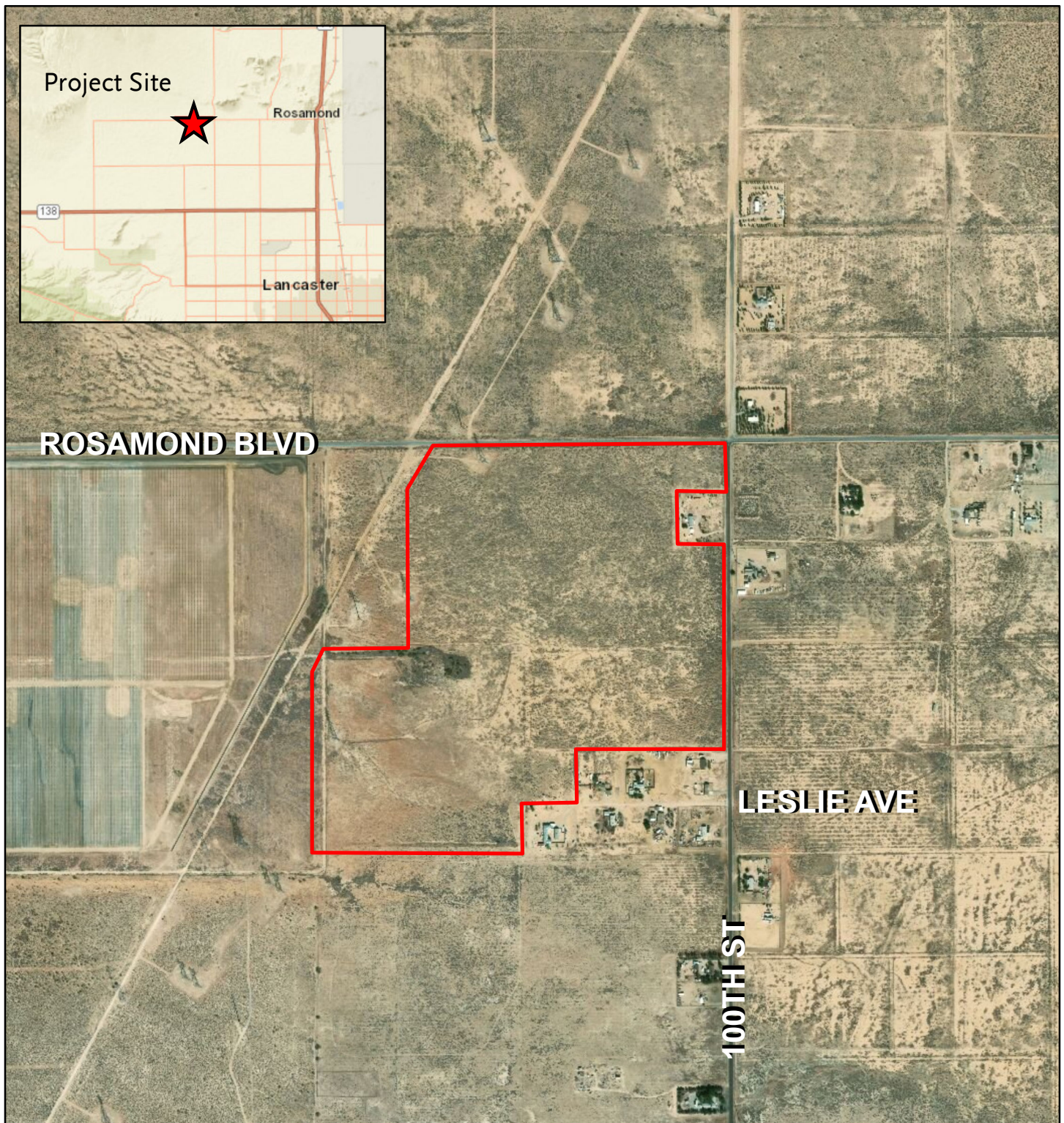
Project Description

The Los Angeles Department of Water and Power (LADWP) is proposing to construct and operate a new 230 kilovolt (kV) switching station in Kern County, California in the western Antelope Valley on 119.57 acres of land (**Figure 1**). The Project site is bounded on the north by Rosamond Boulevard, and vacant land lies to the east and south. Immediately to the west of the Project site, there are several high voltage transmission lines owned by LADWP and Southern California Edison (SCE). The project site is surrounded by sparsely vegetated vacant or undeveloped lands. The nearest land uses are residences located adjacent to project site the northeast and southeast quadrants. Scattered rural single-family residences are also located approximately 200 to 1,400 feet to the east of the Project site. Other land uses within the vicinity of the site include industrial uses, solar generation facilities, and agricultural plots.

The permanent disturbance within the new station is 1,200 feet in length and 800 feet in width. Two future expansions will occur on the Project site, the first expansion will be on the north side of the new switching station. The total station size will be expanded to 350 feet in length, 350 feet in width for the Flexible Alternating Current Transmission System (FACTS) Device. The second expansion will be on the south side of the new switching station. The total station size will be expanded to 850 feet in length, 850 feet in width for the Battery Energy Storage System (BESS) Device. The Project also includes operation and maintenance of the Rosamond Switching Station. Project activities include installation of electrical structures and equipment for transmission lines, staging areas, new roadway within the station, FACTS Device building, and BESS. All construction activities will occur within the 41-acre area. Existing roads will be used to access the Project site.




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Legend

 Project Area

0 375 750 1,500 Feet




LADWP Rosamond Switching Station Project
Air Quality and Greenhouse Gas Technical Memorandum

TAHA 2017-082

Power Engineers Inc.

FIGURE 1
REGIONAL AND PROJECT LOCATION

Construction is anticipated to begin in Spring 2020 with active construction activity taking approximately 38 months. Up to 70 construction workers would be working on the proposed Project at any time. Construction equipment would typically include equipment similar graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks will also be required. Temporary construction fencing would be placed around the property boundary or extended area of construction, if necessary. Excavation at the Project site would largely be related to site preparation and would result in a limited number of off-site haul truck trips. Heavy-duty truck trips would include approximately 153 concrete truck trips to the site. Construction details are limited at this time in the planning process and the analysis assumes a maximum of 20 concrete truck trips per day and 10 truck trips per day for the aggregate base. Refer to the appendix to this Technical Memorandum for information related to the estimated fleet mix and daily activities.

Air Quality

This assessment was undertaken to determine whether construction or operation of the proposed Project would have the potential to result in significant environmental impacts related to Air Quality in the context of the Appendix G Environmental Checklist criteria of the CEQA Statute and Guidelines. Implementation of the proposed Project may result in a significant environmental impact related to air quality if the proposed Project would:

- a) Conflict with or obstruct implementation of the applicable air quality plan;
- b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard;
- c) Expose sensitive receptors to substantial pollutant concentrations; and/or
- d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people.

Background Information

The following analysis examines the degree to which the proposed Project may result in changes to air quality on regional and local scales. Air quality is characterized by ambient air concentrations of seven specific pollutants identified by the United States Environmental Protection Agency (USEPA) to be of concern with respect to health and welfare of the general public. These specific pollutants, known as “criteria air pollutants,” are pollutants for which the federal and State governments have established ambient air quality standards, or criteria, for outdoor concentrations to protect public health. The federal ambient concentration criteria are known as the National Ambient Air Quality Standards (NAAQS), and the California ambient concentration criteria are referred to as the California Ambient Air Quality Standards (CAAQS). Federal and State criteria air pollutants include ground-level ozone (O₃), nitrogen dioxides (NO₂), carbon monoxide (CO), sulfur dioxide (SO₂), respirable particulate matter ten microns or less in diameter (PM₁₀), fine particulate matter 2.5 microns or less in diameter (PM_{2.5}), and lead (Pb). All of these pollutants are directly emitted to the atmosphere with the exception of O₃, which is formed through chemical reactions involving oxides of nitrogen (NO_x) and volatile organic compounds (VOC) in the presence of heat energy. Although all NO_x and VOC are not identified by regulatory authorities as criteria pollutants, their contributions to atmospheric O₃ formation and concentrations make them important regional air pollutants.

Existing Setting and Regulatory Framework

The project site is located within the jurisdiction of the Eastern Kern Air Pollution Control District (EKAPCD). The EKAPCD is a local government agency whose mission is to attain and maintain ambient air quality standards and protect the public and environment of eastern Kern County from significant adverse effects of air pollution. Endeavors undertaken by the EKAPCD to accomplish its goals include adoption of rules that limit pollution, issuance of permits to ensure compliance, and inspection of pollution sources. Additionally, the EKAPCD is tasked with preparing clean air plans to identify existing air quality conditions, assess air pollution sources and transport within the region, and determine how to control pollution sources most effectively. The EKAPCD also functions in a regulatory oversight role in assessing the air quality impacts associated with new businesses and land development projects.

USEPA and California Air Resources Board (CARB) have established federal and State standards for criteria pollutants. The pollutants relevant to the proposed Project include ground-level O₃, NO₂, CO, PM₁₀, and PM_{2.5}.

Extensive regional monitoring of SO₂ and lead concentrations have demonstrated sustained atmospheric levels substantially below applicable air quality standards, and proposed Project emissions would be of negligible magnitude, therefore these pollutants are excluded from the analyses contained herein. USEPA and CARB designate areas as attainment, maintenance, or nonattainment depending on air quality conditions. The EKAPCD jurisdiction is designated as serious nonattainment for the federal 8-hour O₃ and PM₁₀ standards and nonattainment areas for State O₃ and PM₁₀ standards.

EKAPCD Prohibitions (Regulation IV). EKAPCD Rule 401 and Rule 402 limit the emissions of visible particulate matter and wind erosion or fugitive dust from material handling and hauling, bulk storage, earthmoving, construction, and demolition. These rules prohibit any emissions of fugitive dust from construction, demolition, or other operations that remain visible in the atmosphere beyond the property line of the site of the source, except along roadways. Rule 419 prevents public nuisances.

EKAPCD published its *2017 Ozone Attainment Plan for the 2008 Federal 75 ppb 8-Hour Ozone Standard*, which was adopted July 27, 2017. The Plan contained a discussion of contingency measure requirements and how these requirements are met for Eastern Kern County by emission reductions from continued implementation of CARB's Mobile Source Program, including fleet turnover between the attainment year (2020) and the year following (2021). CARB is amending the Eastern Kern Ozone Plan to include emission inventories for ROG and NO_x for the 2011 baseline year, 2017 milestone year, and 2020 attainment year.

EKAPCD has adopted quantitative mass thresholds to guide the assessment of the potential for air quality impacts in accordance with CEQA.¹ A project would have a significant air quality impact on the environment, if it would generate daily or annual emissions exceeding any of the following threshold values:

TABLE 1: EKAPCD AIR QUALITY SIGNIFICANCE THRESHOLDS				
Source and Averaging Period	Pollutant			
	VOC	NO _x	SO _x	PM ₁₀
Annual Emissions, All Sources (tons/year)	25	25	27	15
Daily Emissions, Mobile Sources (pounds/day)	137	137	-	-
SOURCE: EKAPCD, 2004.				

Additionally, a project may have a significance impact on air quality if it would:

- Cause or contribute to an exceedance of any CAAQS;
- Exceed the EKAPCD health risk public notification thresholds; or
- Be inconsistent with adopted federal and state Air Quality Attainment Plans.

¹EKAPCD, *Kern County CEQA Implementation Document*, June 2004.

Impact Analysis

a) Would the proposed Project conflict with or obstruct implementation of the applicable air quality plan? (Less-than-Significant Impact)

Construction

Construction of the proposed Project is anticipated to begin in Spring 2020 and persist for a total of approximately 38 months with operational commissioning near the end of 2023. Graders, scrapers, and dozers would generate fugitive dust emissions during material displacement and site leveling activities. The water trucks employed on the project site would be used to suppress dust during the ground disturbance activities. Based on controlled dust suppression studies, application of water to disturbed areas at least twice daily would reduce fugitive dust (PM₁₀ emissions) by approximately 55 percent.² Construction activities would be conducted in accordance with EKAPCD Rule rules and regulations to prevent the occurrence of unwarranted fugitive dust emissions and public nuisances. All air pollutant emissions associated with construction activities would cease upon completion of the project, and its implementation would not introduce a long-term source of air pollutant emissions to the project area. As shown in **Table 2** and **Table 3**, below, construction of the proposed Project would not exceed applicable annual or daily EKAPCD significance thresholds, respectively. Therefore, the proposed Project would result in a less-than-significant impact related to construction conflict with or obstruct implementation of air quality plans. No mitigation measures would be necessary.

Operations

The proposed switching station is a passive land use that would not generate regular or substantial daily emissions. Maintenance activities would be intermittent and include limited vehicle trips for inspection and repair of project components. In addition, the proposed Project would accommodate the interconnection process for planned renewable energy projects in the project vicinity and would support LADWP's Renewable Portfolio Standard goals. The conversion of nonrenewable to renewable energy generation is a key component of local and statewide efforts to reduce air pollution. Therefore, the proposed Project would result in a less-than-significant impact related to operational conflict with or obstruct implementation of air quality plans. No mitigation measures would be necessary.

Mitigation Measures

No significant impacts have been identified related construction or operational air quality plans. Therefore, no mitigation measures are required.

²South Coast Air Quality Management District, *Fugitive Dust Mitigation Measure Table XI-A: Construction & Demolition*, revised 2007.

- b) Would the proposed project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard? (Less-than-Significant Impact)***

Construction

The project area is currently designated nonattainment for O₃ and PM₁₀ standards. By its very nature, air pollution is largely a cumulative impact. No single project is sufficient in size to, by itself, result in nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulatively significant adverse air quality impacts. If a project exceeds the identified significance thresholds, its emissions may be cumulatively considerable, potentially resulting in significant adverse air quality impacts to the region's existing air quality conditions. In that case, additional analysis to assess cumulative impacts would be necessary.

The EKAPCD significance thresholds presented in Table 1 are the reference metric for this analysis. Construction activities involved with implementation of the proposed Project would employ the following best management practices to comply with EKAPCD Rule 402 Fugitive Dust³:

- All soil excavated or graded should be sufficiently watered to prevent excessive dust. Watering should occur as needed with complete coverage of disturbed soil areas. Watering should be a minimum of twice daily on unpaved/untreated roads and on disturbed soil areas with active operations;
- All clearing, grading, earth moving, and excavation activities should cease
 - a) During periods of winds greater than 20 mph (averaged over one hour), if disturbed material is easily windblown, or
 - b) When dust plumes of 20 percent or greater opacity impact public roads, occupied structures, or neighboring property;
- All fine material transported offsite should be either sufficiently watered or securely covered to prevent excessive dust;
- If more than 5,000 cubic yards of fill material will be imported or exported from the site, then all haul trucks should be required to exit the site via an access point where a gravel pad or grizzly has been installed;
- Areas disturbed by clearing, earth moving, or excavation activities should be minimized at all times;
- Stockpiles of soil or other fine loose material shall be stabilized by watering or other appropriate method to prevent wind-blown fugitive dust;
- Once initial leveling has ceased all inactive soil areas within the construction site should be watered twice daily until soil has sufficiently crusted to prevent fugitive dust emissions;
- All active disturbed soil areas should be sufficiently watered to prevent excessive dust, but no less than twice a day;
- On-site vehicle speed should be limited to 15 miles per hour;

³EKAPCD, *Suggested Air Pollutant Mitigation Measures for Construction Sites for Eastern Kern APCD*, 2006.

- All areas with vehicle traffic should be paved, treated with dust palliatives, or watered a minimum of twice daily;
- Streets adjacent to the project site should be kept clean and accumulated silt removed;
- Access to the site should be by means of an apron into the project from adjoining surfaced roadways. The apron should be surfaced or treated with dust palliatives;
- Properly maintain and tune all internal combustion engine powered equipment;
- Require employees and subcontractors to comply with California's idling restrictions for compression ignition engines.

The application of water to disturbed areas and material stockpiles twice daily would reduce fugitive dust emissions by approximately 55 percent. Maximum daily air pollutant emissions during construction activities were quantified using off-road equipment emission factors and calculation methodologies contained in documentation for the California Emissions Estimator Model (CalEEMod, Version 2016.3.2). The CalEEMod software is the preferred tool for estimating air pollutant emissions associated with land use development projects under CEQA. All calculation sheets can be found in the Appendix files.

Construction of the Project would generally occur in three phases, Site Preparation, Site Construction, and Site Finalization. According to the preliminary schedule, Site Preparation activities would take place in 2020 and 2022, Site Construction activities would take place in 2020–2023, and Site Finalization activities would occur in 2022 and 2023. To analyze air pollutant emissions associated with construction activities, air pollutant emissions were compared to the EKAPCD significance thresholds presented in **Table 1**, above. **Table 2** presents the annual emissions of VOC, NO_x, SO_x, and PM₁₀ that would be generated by construction of the proposed Project and compares them to the applicable EKAPCD significance thresholds. The EKAPCD has not established annual thresholds for CO or PM_{2.5}, therefore those emissions are not presented. Maximum annual emissions would not exceed the applicable EKAPCD thresholds in any year.

TABLE 2: CONSTRUCTION EMISSIONS ASSESSMENT – ANNUAL EMISSIONS					
Year	Activity	Pollutant Emissions			
		VOC	NO _x	SO _x	PM ₁₀
2020	Site Preparation	0.62	6.45	0.01	1.43
2020	Site Construction	0.34	3.41	0.01	0.37
2020	Total Annual	0.96	9.86	0.02	1.80
2021	Site Construction	1.28	12.61	0.03	1.45
2021	Total Annual	1.28	12.61	0.03	1.45
2022	Site Preparation	0.25	2.42	0.01	0.68
2022	Site Construction	1.24	11.36	0.04	1.39
2022	Site Finalization	0.21	1.92	0.01	0.29
2022	Total Annual	1.70	15.71	0.05	2.36
2023	Site Construction	0.88	7.70	0.03	0.98
2023	Site Finalization	0.16	1.44	0.01	0.23
2023	Total Annual	1.05	9.14	0.03	1.21
All	Maximum Annual	1.70	15.71	0.05	2.36
EKAPCD Annual Threshold (tons/year)		25	25	27	15
Exceed Threshold?		No	No	No	No
SOURCE: TAHA, 2019.					

Table 3 presents the daily mobile source air pollutant emissions that would be generated by construction of the project. The emissions presented conservatively assume the possibility of overlap between activities in each given year.

TABLE 3: CONSTRUCTION EMISSIONS ASSESSMENT – DAILY MOBILE SOURCE EMISSIONS			
Year	Activity	Daily Pollutant Emissions	
		VOC (lbs/day)	NO_x (lbs/day)
2020	Site Preparation	0.7	4.53
2020	Site Construction	1.07	7.35
2020	Maximum Daily Overlap	1.79	11.88
2021	Site Construction	0.92	6.19
2021	Site Construction	0.92	6.19
2022	Site Preparation	0.52	3.40
2022	Site Construction	0.74	4.6
2022	Site Final	0.49	1.47
2022	Maximum Daily Overlap	1.75	9.52
2023	Site Construction	0.74	4.64
2023	Site Final	0.49	1.47
2023	Maximum Daily Overlap	1.23	6.11
Maximum Daily Emissions		1.79	11.88
EKAPCD Daily Mobile Threshold (pounds/day)		137	137
Exceed Threshold?		No	No
SOURCE: TAHA, 2019.			

As shown in **Table 2** and **Table 3**, air pollutant emissions generated during construction activities would remain well below both the annual and daily EKAPCD significance thresholds. EKAPCD thresholds were designed to prevent the occurrence of air quality violations during construction of projects subject to CEQA. Therefore, the construction emissions do not have the potential to contribute to a cumulative effect. No mitigation measures would be necessary.

Operation

Regarding permanent activities, the proposed switching station is a passive land use that would not generate regular or substantial daily emissions. Maintenance activities would be intermittent and would include limited vehicle trips for inspection and repair of project components. Operations would not introduce any new source of air pollutant emissions to the Project area and therefore does not have the potential to contribute to a cumulative effect. This impact would be less than significant. No mitigation measures would be necessary.

Mitigation Measures

No significant impacts have been identified related to the Project. Therefore, no mitigation measures are required.

***c) Would the proposed Project expose sensitive receptors to substantial pollutant concentrations?
(Less-than-Significant Impact)***

Construction

The greatest potential for toxic air contaminant exposure during construction would be associated with diesel particulate matter emissions from heavy equipment exhaust. The dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the maximally exposed individual. The risks estimated for a maximally exposed individual are higher if a fixed exposure occurs over a longer period of time. Local exposure would range from weeks to months depending on the construction phase and location.

Scattered rural single-family residences are located near the Project site, with the nearest being located 150 feet from the Project site on Leslie Avenue. Construction equipment, vehicle, and material movement activities would occur throughout the Project site and the majority of activity would generally occur in the western portion of the site, where installation of the station and ancillary infrastructure will be at least 1,000 feet from residences. In addition, the Project would be subject to the regulations and laws relating to toxic air containments at the regional, State, and federal level that would protect sensitive receptors from substantial concentrations. This impact would be less than significant.

Operation

Regarding permanent activities, the proposed switching station is a passive land use that would not generate regular or substantial daily emissions. Maintenance activities would be intermittent and would include limited vehicle trips for inspection and repair of project components. Operations would not introduce any new substantial source of air pollutant emissions to the project area and therefore does not have the potential to generate substantial pollutant concentrations. This impact would be less than significant.

Mitigation Measures

No significant impacts have been identified related to the Project. Therefore, no mitigation measures are required.

d) Would the proposed Project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people? (Less-than-Significant Impact)

Construction

Equipment exhaust would be the primary sources of odors during construction activities. Odors would be localized and generally confined to the immediate area surrounding the project site. Construction would employ best management practices (e.g., inspections and maintenance of diesel-fueled heavy-duty equipment) to prevent the occurrence of a nuisance odor in accordance with EKAPCD Rule 419, and the odors would be typical of most construction sites and temporary in nature. There are no schools or public parks, or other sensitive land uses in close proximity to the project site that would be especially sensitive to odors emanating from these sources. Additionally, the construction of the proposed Project would adhere to all requirements set forth in the EKAPCD Rules and Regulations. This impact would be less than significant.

Operation

Operational activities involve routine maintenance and would not introduce any new sources of odors to the Project area. There is no potential the proposed Project to result in a permanent impact related to odors.

Mitigation Measures

No significant impacts have been identified related to the Project. Therefore, no mitigation measures are required.

Greenhouse Gas Emissions

The assessment was undertaken to determine whether construction or operation of the Project would have the potential to result in significant environmental impacts related to GHG emissions in the context of the Appendix G Environmental Checklist criteria of the CEQA Statutes and Guidelines. Implementation of the proposed Project may result in a significant environmental impact related to GHG Emissions if the proposed Project would:

- a) Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment; and/or
- b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing GHG emissions.

The lead agency is LADWP, which possesses the authority of discretionary approval for the proposed Project. Section 15064.4 of the CEQA Guidelines states that a lead agency should make a good-faith effort to describe, calculate, or estimate the amount of GHG emissions resulting from a project, and that the lead agency should consider the following factors when assessing the significance of impacts from GHG emissions on the environment:

- 1. The extent to which the project may increase or reduce GHG emissions as compared to the existing environmental setting;
- 2. Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and
- 3. The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions.

Existing Setting and Regulatory Framework

The proposed Project is located in rural unincorporated Eastern Kern County and is generally surrounded by sparsely distributed residential plots, agricultural land, and solar generating facilities. There are no substantial stationary sources of GHG emissions in the immediate Project vicinity. In 2018, the Kern Council of Governments (KCOG) published and adopted its *2018 Regional Transportation Plan* (RTP) to establish a set of regional transportation goals, policies, and actions intended to guide development of the planned multimodal transportation systems in Kern County. California's Sustainable Communities and Climate Protection Act, or Senate Bill (SB) 375, calls for the Kern County RTP to include a Sustainable Communities Strategy (SCS) that reduces GHG emissions from passenger vehicles and light-duty trucks. In addition, the RTP must comply with CEQA, and the 2018 RTP was determined to meet this requirement.

In 2012, the EKAPCD published guidance for evaluating GHG emissions within its jurisdiction under CEQA Guidelines when serving as the lead agency.⁴ The guidance states that any project that is not exempt from CEQA would require quantification of Project-Specific GHG Emissions to determine annual emissions. The EKAPCD guidance also states that projects emitting less than 25,000 tons per year (tpy) of GHGs would be determined to have a less than significant individual or cumulatively considerable impact on GHG emissions and would not require further CEQA review. EKAPCD reasoned that 25,000 tpy is less than the threshold the CARB uses for industrial source applicability as the first phase of the Assembly Bill (AB) 32 Cap-and-Trade

⁴EKAPCD, *Addendum to CEQA Guidelines Addressing GHG Emissions Impacts for Stationary Source Projects When Serving as Lead CEQA Agency*, March 2012.

Program and slightly more stringent than the Cap-and-Trade Program. Due to the relatively small magnitude of the regional GHG emission inventory in Eastern Kern County, only large-scale industrial projects that may be subject to federal regulation and EKAPCD Rule 201.3 Federally Enforceable Limits on Potential to Emit could have potentially significant impacts related to GHG emissions under CEQA Guidelines under EKAPCD jurisdiction.

Impact Analysis

GHG emissions refer to a class of pollutant emissions that are generally understood to affect global climate conditions due to their long atmospheric lifetimes and ability to trap infrared heat energy in the atmosphere that is radiating from the Earth's surface, known as the greenhouse effect. The most prevalent anthropogenic GHG compounds are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). The presence of these gases and other GHG compounds in the atmosphere maintains global surface temperatures at generally habitable levels. Of all the GHG compounds, CO₂ is the most abundant gas that contributes to climate change, especially through fossil fuel combustion. The other GHG compounds are less abundant but have a higher potential to affect climate change on a per-mass basis. To account for the higher global warming potential, GHG emissions are commonly expressed in the equivalent mass of CO₂, denoted as CO₂e.

Anthropogenic emissions of CO₂, CH₄, and N₂O have resulted in atmospheric concentrations in excess of natural ambient levels that are responsible for intensifying the greenhouse effect. In acknowledgement of the environmental consequences of the amplified greenhouse effect, regulations have been adopted at international, federal, state, regional, and local levels to control GHG emissions. GHG emissions associated with implementation of the Project are evaluated in the context of applicable regulations aimed at reducing GHG emissions. As mentioned previously in the Introduction, the proposed Project is not located within a metropolitan planning organization's jurisdiction for which an RTP has been prepared. The GHG emissions impacts assessment considers GHG emissions associated with implementation of the proposed Project with respect to statewide and EKAPCD policies.

a) Would the proposed Project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment? (Less-than-Significant Impact)

The atmospheric effects of GHG emissions are borne globally and cumulative in nature, and the direct effect of an individual project's GHG emissions on the environment cannot be delineated precisely. Regulations adopted to control and reduce GHG emissions generally take a holistic approach and consider a variety of sources and strategies to achieve their objectives. Due to the long atmospheric lifetimes of GHG emissions, the assessment of environmental impacts characterizes GHG emissions associated with implementation of the proposed Project in terms of annual emissions of tons of CO₂e. GHG emissions that would be generated by construction and operation of the proposed Project are analyzed together.

Construction would generate GHG emissions through the use of heavy-duty equipment and vehicle trips for workers and material hauling to and from the project site. Annual GHG emissions were estimated using emission factors and calculations contained within CalEEMod, Version 2016.3.2, which is the preferred regulatory model for quantifying GHG and air pollutant emissions associated with land use development projects. The emissions modeling exercise incorporated conservative assumptions that 20 construction workers would report to the site every day and that all required equipment would be used continuously for eight hours per day. Construction of the proposed Project is expected to last for a total of approximately 38 months beginning in early 2020, with completion expected by the end of 2023.

Following the completion of construction activities, the proposed switching station is a passive land use that would not generate regular or substantial daily emissions. Maintenance activities would be minimal and intermittent and would include limited vehicle trips for inspection and repair of Project components. Operations would not introduce any new substantial source of GHG emissions to the Project area. Therefore, the emissions modeling exercise did not quantify any GHG emissions associated with operations.

Table 4 displays the results of the GHG emissions analysis for heavy duty construction equipment and vehicle trips during construction activities, expressed in tons of CO₂e. The GHG emissions associated with construction of the Project would cease entirely upon completion of construction activities. There would be negligible long-term operational sources of GHG emissions. The emissions modeling results presented in **Table 4** demonstrate that maximum annual emissions associated with construction of the Project would be approximately 4,382.6 tons CO₂e. Based on the above analyses, the proposed Project would result in a less-than-significant impact related to GHG emissions.

Mitigation Measures

No significant impacts have been identified related to the Project. Therefore, no mitigation measures are required.

TABLE 4: ESTIMATED GHG EMISSIONS – PROJECT CONSTRUCTION	
Activity & Year	Annual Emissions (Tons CO₂e)
Site Preparation (2020) – Equipment	878.2
Site Preparation (2020) – Mobile Sources	298.6
Site Construction (2020) – Equipment	568.0
Site Construction (2020) – Mobile Sources	240.7
Total 2020 Emissions	1,985.5
Site Construction (2021) – Equipment	2,367.6
Site Construction (2021) – Mobile Sources	972.7
Total 2021 Emissions	3,340.3
Site Preparation (2022) – Equipment	439.3
Site Preparation (2022) – Mobile Sources	140.2
Site Construction (2022) – Equipment	2,368.7
Site Construction (2022) – Mobile Sources	940.3
Site Finalization (2022) – Equipment	357.0
Site Finalization (2022) – Mobile Sources	137.2
Total 2022 Emissions	4,382.6
Site Construction (2023) – Equipment	1,801.1
Site Construction (2023) – Mobile Sources	573.1
Site Finalization (2023) – Equipment	297.6
Site Finalization (2023) – Mobile Sources	114.3
Total 2023 Emissions	2,786.1
Maximum Annual Emissions	4,382.6
EKAPCD Annual Threshold	25,000
Exceed Threshold?	No
Note: Emissions modeling files can be found in the Appendix. SOURCE: TAHA, 2019.	

b) Would the proposed Project or its alternatives conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs? (Less-than-Significant Impact)

Plans, policies, and regulations adopted to reduce GHG emissions generally focus on long-term sources of GHG emissions that provide opportunities for life-cycle improvements in efficiency and sustainability. Implementation of the proposed Project would not introduce a new permanent source of GHG emissions into the project area, and GHG emissions resulting from construction activities would cease entirely following completion of the switching station. As discussed previously, construction of the Project would not generate GHG emissions of sufficient quantities to approach exceeding EKAPCD annual threshold and represent only 17.5 percent of the significance threshold value. Therefore, the proposed Project would result in a less-than-significant impact related to GHG plans, policies, and regulations.

Mitigation Measures

No significant impacts have been identified related to the Project. Therefore, no mitigation measures are required.

References

Eastern Kern County Air Pollution Control District, *2017 Ozone Attainment Plan For 2008 Federal 75 ppb 8-Hour Ozone Standard*, July 2017.

Eastern Kern County Air Pollution Control District, *Addendum to CEQA Guidelines Addressing GHG Emission Impacts for Stationary Sources When Serving as Lead CEQA Agency*, March 2012.

Eastern Kern County Air Pollution Control District, *Kern County CEQA Implementation Document*, June 2004.

Eastern Kern County Air Pollution Control District, *Suggested Air Pollutant Mitigation Measures for Construction Sites for Eastern Kern APCD*, revised March 2012.

Kern Council of Governments, *2018 Regional Transportation Plan*, adopted August 2018.

South Coast Air Quality Management District, *Fugitive Dust Mitigation Measure Table XI-A: Construction & Demolition*, revised 2007.

APPENDIX B

BIOLOGICAL RESOURCES HABITAT ASSESSMENT

October 2019

LOS ANGELES DEPARTMENT OF WATER AND POWER

Rosamond Switching Station Project **Kern County, California** *Draft – Biological Resources Habitat Assessment*

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148795

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ACRONYMS AND ABBREVIATIONS

BESS	Battery Energy Storage System
BLM	Bureau of Land Management
BR-HC	Barren Ridge – Haskell Canyon
Cal-IPC	California Invasive Plant Council
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
°F	degrees Fahrenheit
FACTS	Flexible Alternative Current Transmission System
FR	Federal Register
kV	kilovolt
LADWP	Los Angeles Department of Water and Power
POWER	POWER Engineers, Inc.
Project	Rosamond Switching Station Project
ROW	right-of-way
SCE	Southern California Edison
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

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1.0 INTRODUCTION

The Los Angeles Department of Water and Power (LADWP) proposes to construct and operate the new 230 kilovolt (kV) Rosamond Switching Station (Project). The proposed Project would be constructed adjacent to the LADWP right-of-way (ROW) for the Barren Ridge – Haskell Canyon (BR-HC) 230 kV Transmission Lines 1, 2, and 3 and would be located approximately 30 miles south of the Barren Ridge Switching Station. The construction of the proposed Project would be located on a LADWP-owned property. The station is needed to allow LADWP greater control in managing the renewable energy transfer along the existing high voltage transmission lines and increase overall reliability. The Project would also accommodate the interconnection process for planned renewable energy projects in the Project vicinity and would support LADWP's Renewable Portfolio Standard goals. In order to control energy transfer capabilities, the station design includes the "cut-in" of the BR-HC Transmission Lines 1, 2, and 3 and one interconnector with a breaker and half bus configuration. The final configuration of the station needs to accommodate reactive compensation equipment and existing and planned renewable energy interconnections.

1.1 Project Location

The proposed Project is located in Kern County, California in the western Antelope Valley approximately three miles north of the Los Angeles County border (refer to Figure 1). It is situated in the northeast portion of Section 24 of Township 9N, Range 14W as shown on the Little Buttes, CA 1:24,000 United States Geological Survey (USGS) quadrangle (refer to Figure 2). Rosamond Boulevard borders the Project area to the north, 100th Street West to the east, 105th Street West to the west, and Astoria Avenue to the South. Vacant land surrounds the study area, with scattered rural residential to the south and east. Immediately to the west of the proposed Project, there are several high voltage transmission lines owned by LADWP and Southern California Edison (SCE).

The Project site consists of approximately 120 acres of undeveloped land. The field survey was conducted within the whole of the Project area with additional and immediately adjacent areas surveyed (approximately 149 acres) due to the potential need for relocation of existing transmission line towers as part of the Project (refer to Figure 3 for the boundary of the study area).

1.2 Project Description

The Project includes the construction of a new switchyard and a designated area for the 10-bay expansion and new control house. The permanent disturbance within the new station is 1,200 feet in length and 800 feet in width. Two future expansions are planned to occur on the Project site, the first expansion would be to the north of the new switching station and would consist of the construction of the Flexible Alternating Current Transmission System (FACTS) Device. The total area for the FACTS device would be 350 feet in length, 350 feet in width. The second expansion would be to the south of the new switching station and would consist of the construction of the Battery Energy Storage System (BESS) Device. The total area for the BESS device would be 850 feet in length, 850 feet in width. The Project would also include operation and maintenance of the Rosamond Switching Station. Project construction activities include installation of electrical structures and equipment for transmission lines, staging areas, new roadway(s) within the station, FACTS Device building, and BESS. Existing roads will be used to access the Project site. The estimated schedule for Project construction is 38 months.

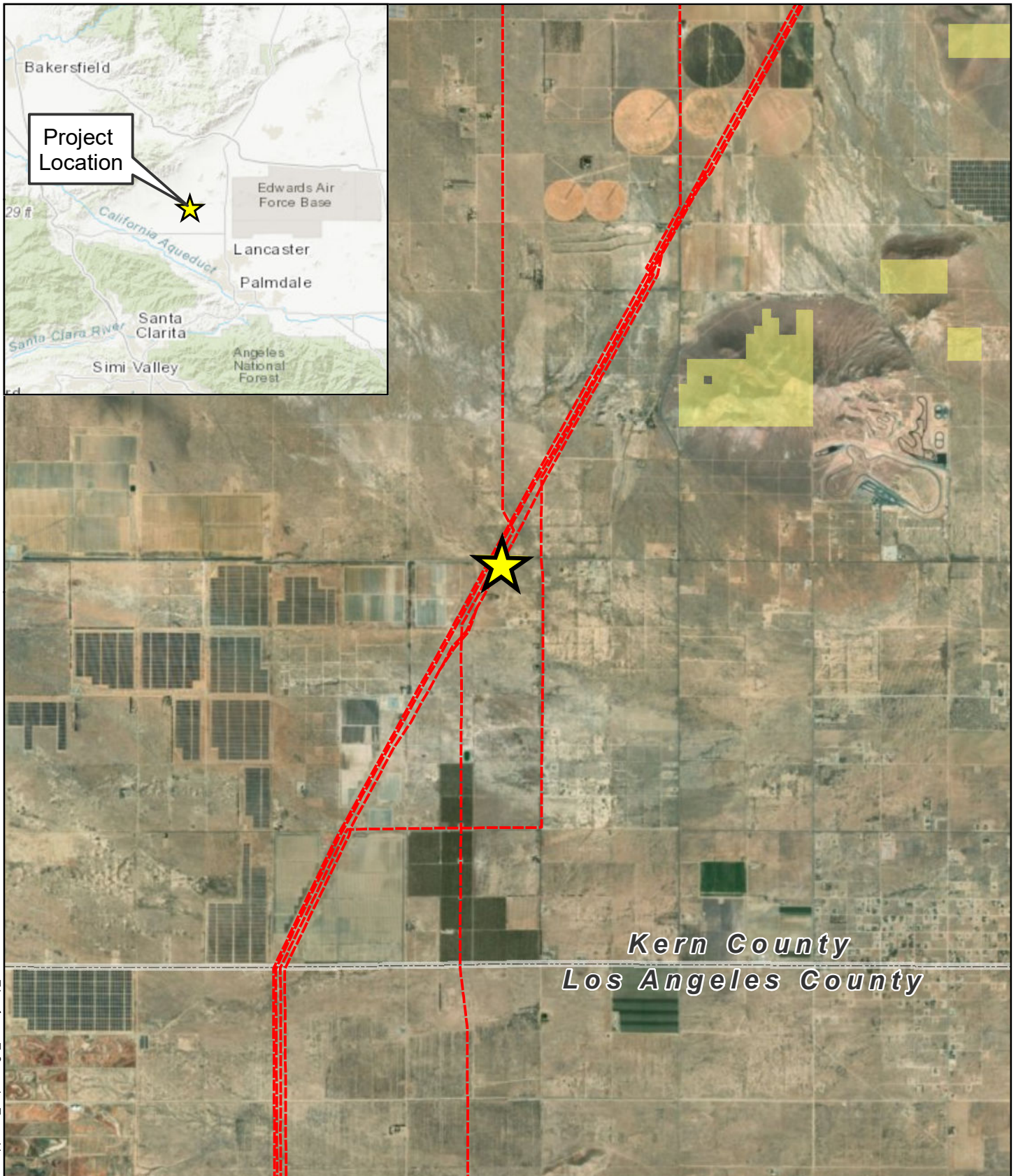
Construction activities include site grading and drainage development, installation of concrete foundation and steel support structures, installation of below- and above-ground electrical conduits for equipment power and control, installation of below- and above-grade grounding conductors,

FACTS Device building, FACTS switchyard, BESS station, and installation of new control and relay houses.

Site preparation work for the Project includes clearing and grubbing, excavation, placement, and compaction of engineered fill to provide stabilized subgrade for switching station facilities. Temporary silt fence and other storm water pollution prevention Best Management Practices will be implemented in accordance with the Storm Water Pollution Prevention Plan. The Project site will be graded to maintain current drainage patterns to the greatest extent possible. The switching station yard will be covered with crushed-rock aggregate.

Reinforced concrete foundations will be installed to support the steel structures, electrical equipment, and control facilities following site grading and development. Foundation work will require approximately 153 trips to the site by 40-ton, 10-yard capacity concrete trucks over a 180-day working period. Equipment required for station construction includes graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks, and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks will also be required. Subsequent to the foundation installation, trenches will be dug to facilitate placement of copper conductors for the station grounding mat.

The elevation of the site is approximately 2,475 feet above mean sea level. The area is vegetated with native and non-native plant species, and portions of the area have been mechanically disturbed by human activities. Annual average precipitation is approximately seven inches, with January and February receiving nearly half the rainfall (Natural Resources Conservation Service, Mojave Station 2019). The average low temperature is 49.6 degrees Fahrenheit (°F), and the average high temperature is 76.2°F, with an average daily mean temperature of 62.9°F. Land uses in the vicinity of the site include industrial uses, solar generation, agriculture, and rural residential.



Legend



Project Location

--- Existing Transmission Line (115 kV to 500 kV)

--- County Boundary

Jurisdiction

Bureau of Land Management

Rosamond Switching Station

Figure 1 Vicinity Map

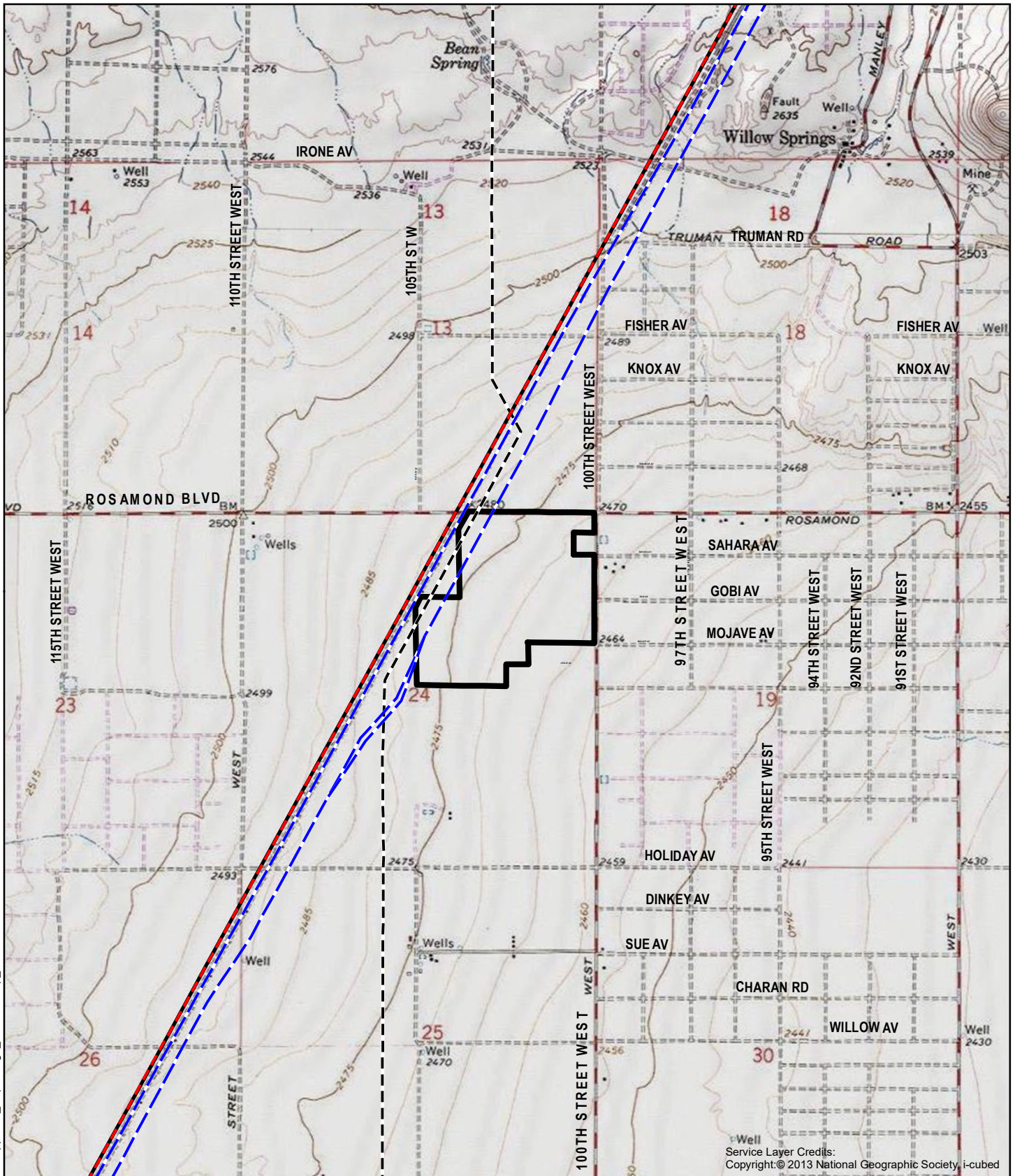


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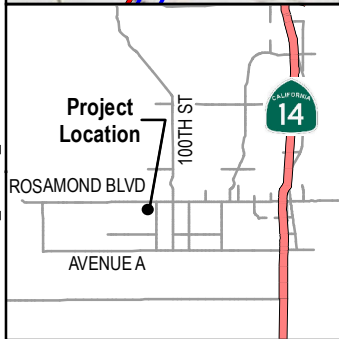


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USDA NAIP/California 2018-07-23





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Legend

-  Survey Boundary
-  LADWP 230 kV Transmission Line
-  LADWP 500 kV DC Transmission Line
-  SCE Transmission Line

Rosamond Switching Station

Figure 2 Location Map

0 1,000 2,000 3,000

Feet



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2.0 METHODS

2.1 Approach to Data Collection

The first step in the approach to data collection for this analysis included the identification and characterization of biological resources, including vegetation community types and special-status plant and animal species that are known to occur or have potential to occur in the Project area. The biological study area that was surveyed is approximately 149 acres and is shown in Figure 3.

“Special-status,” as used in this report, refers to species that are:

- Listed, proposed for listing, or candidates for listing as threatened or endangered under the Federal Endangered Species Act (50 Code of Federal Regulations [CFR] Part 17.12 [listed plants], 50 CFR Part 17.11 [listed animals], 67 Federal Register [FR] 40657 [candidate species], and various notices in the Federal Register [proposed species]);
- Listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act California Department of Fish and Wildlife (CDFW; CDFW 2019);
- Identified by the CDFW as species of concern or fully protected species, including fish and wildlife that do not have State or federal threatened or endangered status but may still be threatened with extinction (CDFW 2019);
- California Species of Special Concern: vertebrate species that have been designated as “species of special concern” by the CDFW because declining population levels, limited range, and/or continuing threats have made them vulnerable to extinction (CDFW 2019);
- Included in the California Native Plant Society (CNPS) Rare Plant Inventory (CNPS 2019);
- Otherwise defined as rare, threatened, or endangered under the California Environmental Quality Act (CEQA; CEQA Guidelines, Section 15380); or
- Identified by the Bureau of Land Management (BLM) as a sensitive species (BLM 2015).

Prior to conducting fieldwork, the biologist reviewed records of known occurrences to identify special-status species that may occur within the study area, including the proposed Project area. Those records were then compared with lists of federal- or State-listed threatened, endangered, or other special-status species. Details of the survey work and approaches to collecting data are described below.

2.2 Literature Review

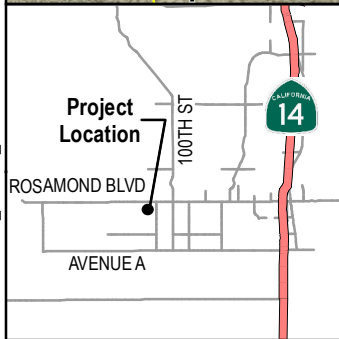
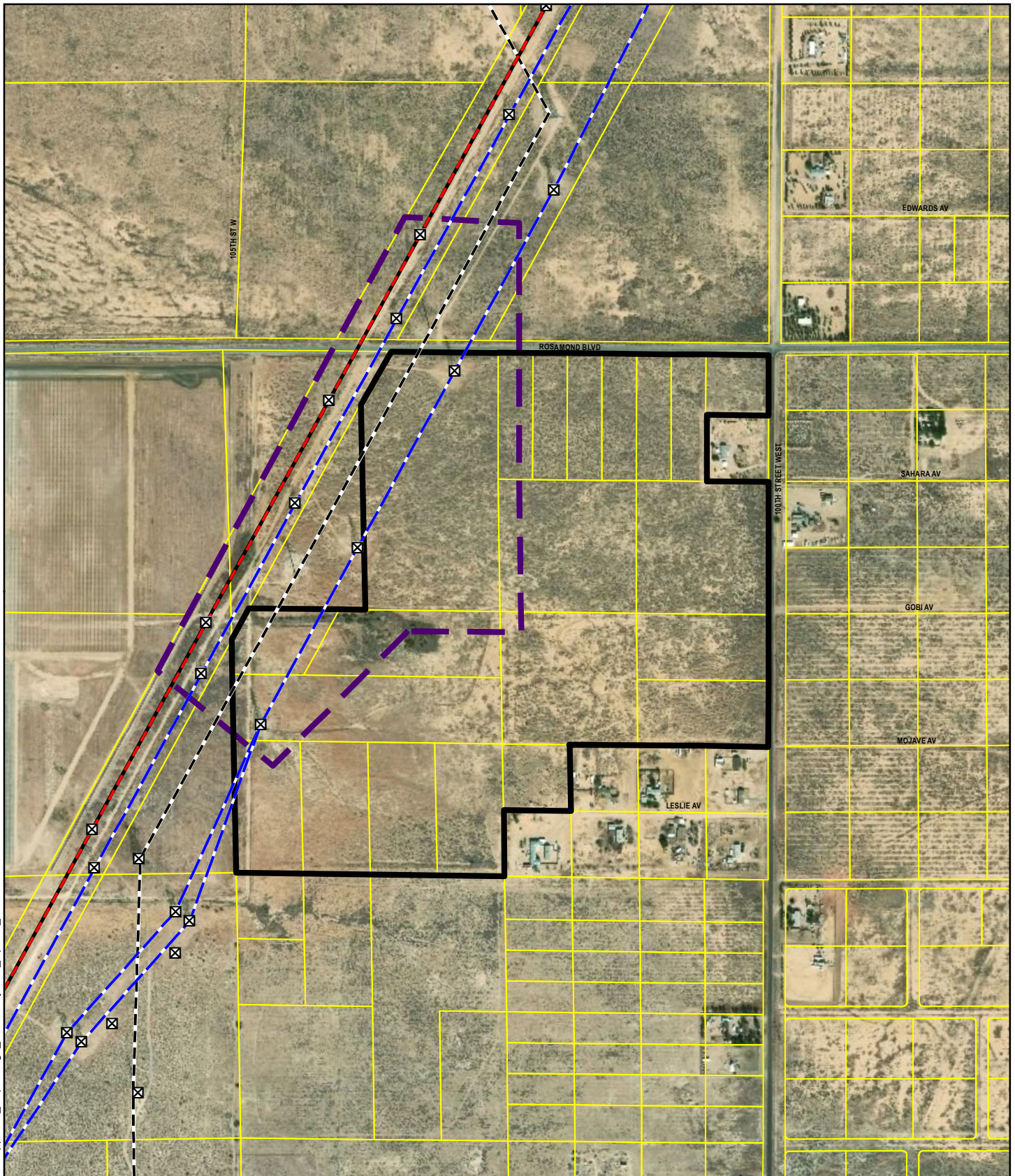
Preliminary investigation included review of information obtained from literature searches, examinations of habitat as discernible from aerial photographs, and database searches including CNPS and the California Natural Diversity Database (CNDDB) records (CDFW 2019). To identify the existing and potential biological resources present in the vicinity of the proposed Project, a geographic information system search was performed. This consisted of mapping baseline biological resource data (vegetation mapping and CNDDB records).

2.3 Field Survey





Reconnaissance-level biological resource surveys were conducted by POWER Engineers, Inc. (POWER) biologist, Ken McDonald. An initial survey was conducted on for October 5, 2017, and a survey of an updated and increased area on August 29, 2019. Areas surveyed in 2017 and in 2019 are shown in Figure 3. Weather was sunny during both survey efforts, with the temperature ranging from low 60s to low 70s °F for the initial survey and the low 60s to high 90s °F for the later survey. The




survey included vegetation mapping as well as botanical and wildlife inventories within the study area, and was conducted by walking throughout the study area and recording detected species. Vegetation communities were classified according to Holland (1986). The botanical inventory of the site was floristic in nature, meaning that all plants observed were identified to the taxonomic level needed to determine whether they were special-status plant species. Wildlife species were detected either by observation, by vocalization, or by sign (e.g., tracks, burrows, scat). Because the reconnaissance-level survey was not conducted during an optimum time of year to detect presence of all special-status plant species with potential to occur, focused floral surveys may be required prior to construction and during the appropriate blooming period(s), as close to the actual construction date as feasible.

Path: W:\148795_LADWP_RosamondSub\DD\GIS\Apps\Bio_Report\Fig3_BioSurveyArea_Update_20190927.mxd



Legend

-  2019 Survey Boundary
-  2017 Survey Boundary
-  Parcel
-  Structure

-  LADWP 230 kV Transmission Line
-  LADWP 500 kV DC Transmission Line
-  SCE Transmission Line

Rosamond Switching Station Figure 3 Biological Survey Boundary

0 180 360 540 720 900
Feet



Date: 10/4/2019



Aerial Photography:
USDA NAIP/California 2018-07-23

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3.0 RESULTS

Vegetation communities consisted mostly of saltbush scrub and rabbitbrush scrub. A more detailed description of these vegetation communities is provided below. No special-status plant species were observed during the survey. A list of plant species observed during the field survey is provided in Appendix A. No special-status wildlife species were detected during the surveys. Few wildlife species were observed within the study area, but wildlife sign was observed more frequently. Burrows of varying sizes were present intermittently throughout the study area, primarily small rodent burrows. Appendix B provides a list of observed animal species the study area.

3.1 Vegetation Community Descriptions

The following vegetation communities were mapped according to Holland (1986) within the study area. Vegetation communities within the study area, for both the 2017 and 2017 surveys are shown in Figure 4.

3.1.1 Saltbush Scrub

Saltbush scrub is an open community dominated by low, grayish, microphyllous shrubs, 0.3 to 1.0 meter tall, usually with a low-growing herbaceous cover, matching the Holland type desert saltbush scrub community. Overall cover is often low, with bare ground surrounded widely spaced shrubs. Stands of desert saltbush scrub are usually dominated by a single species of saltbush (*Atriplex* spp.). Site characteristics include finely textured, poorly drained soils (Holland 1986).

Saltbush comprises the majority of the saltbush scrub community within the study area, with occasional individuals of creosote (*Larrea tridentata*) and rubber rabbitbrush (*Chrysothamnus nauseosus*), with varying amounts of non-native grass species in the herbaceous layer. This community was the largest observed within the study area and comprised the majority of the study area.

3.1.2 Rabbitbrush Scrub

The Holland type rabbitbrush scrub consists of dense to open stands composed almost solely of rubber rabbitbrush shrubs that are typically three feet in height. The community is comprised of fairly evenly spaced gray shrubs flowering in late summer or fall. Rabbitbrush scrub is a disturbance-maintained type that occupies sites that have been burned, grazed, tilled, or otherwise disturbed (Holland 1986). The rubber rabbitbrush series is the equivalent in the Sawyer and Keeler-Wolf (1995) system.

Within the study area, rabbitbrush scrub is predominantly comprised of rubber rabbitbrush with varying cover of species typical of Mojave mixed woody scrub, and with varying amounts of non-native grass species in the herbaceous layer. This community was observed on the eastern portion of the study area.

3.1.3 Non-native Grassland

Non-native grassland is an upland type composed of a dense to sparse cover of mainly introduced annual grasses, usually less than three feet in height Holland (1986). Non-native grassland is widespread in coastal and interior California. It occurs on a variety of soil types, often on level or rolling terrain. Non-native grassland may contain some native perennial grasses, and often includes a diverse assemblage of native annual and perennial forbs (wildflowers). The species composition of

annual grasses and forbs varies considerably between stands. The equivalent series in the system of Sawyer and Keeler-Wolf (1995) is the California annual grassland series.

Annual grass species common in this habitat include cheat grass (*Bromus tectorum*) and other bromes (*Bromus* spp.). Annual forbs observed include Russian thistle (*Salsola tragus*) and red-stem filaree (*Erodium cicutarium*). There appeared to be a heavy presence of native annual forbs, long since desiccated, making this community reminiscent of wildflower fields. This community was observed on the south-western portion of the study area, but components of this community occur throughout all vegetation communities observed within the study area.

3.1.4 Ruderal

Ruderal vegetation is the term used to describe upland vegetation of roadsides and other disturbed sites. It is composed mainly or entirely of weedy non-native grasses and forbs. Ruderal vegetation is not a natural vegetation type; therefore, it is not included in the classification systems of Holland (1986) or Sawyer and Keeler-Wolf (1995).

The ruderal vegetation within the study area was comprised of introduced annual forbs and grasses. Russian thistle, tumble mustard (*Sisymbrium altissimum*), and cheat grass were the most common species observed in the ruderal areas. This community was observed on the western portion of the study area.

3.1.5 Disturbed/Developed

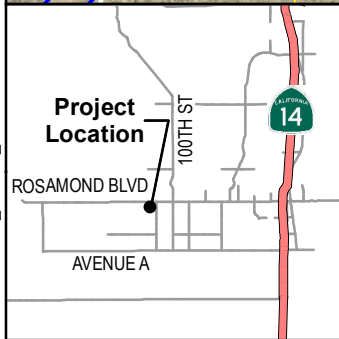
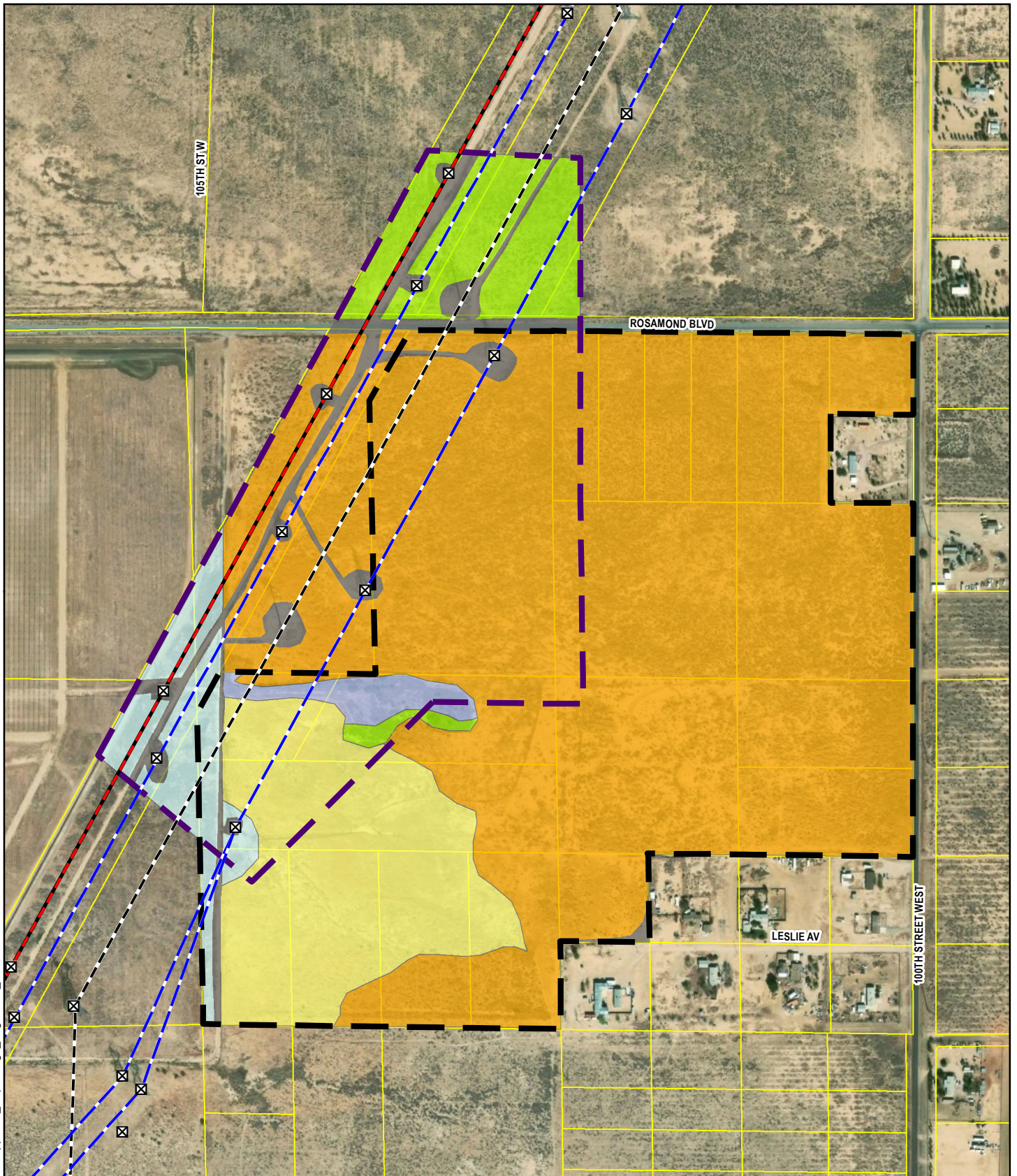
Disturbed/developed areas include cleared or graded lands and clumps of non-native trees, such as tamarisk (*Tamarisk* spp.). Disturbed/developed areas are typically characterized by heavily compacted soils that have been frequently or recently disturbed. They are often devoid of vegetation or possess only a sparse cover, or are vegetated by weedy plant species adapted to disturbance.

Table 1 provides approximate vegetation community acreages found within the 2017 and 2019 study area.

TABLE 1 VEGETATION COMMUNITIES WITHIN THE PROJECT AREA

VEGETATION COMMUNITY	ACRES
Saltbush Scrub	102.8
Rabbitbrush Scrub	9.4
Ruderal	6.9
Non-native Grassland	21.1
Tamarisk	2.2
Disturbed/Developed	7.0
Total Acres	149.4

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- 2019 Survey Boundary
- 2017 Survey Boundary
- Parcel
- Structure
- LADWP 230 kV Transmission Line
- LADWP 500 kV DC Transmission Line
- SCE Transmission Line

Vegetation Communities

- Saltbush Scrub
- Non-native Grassland
- Tamarisk
- Ruderal
- Rabbitbrush Scrub
- Disturbed/Developed

Rosamond Switching Station Figure 4 Vegetation Communities

0 200 400 600
Feet



Date: 10/4/2019



Aerial Photography:
USDA NAIP/California
2018-07-23

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3.2 Special-Status Plant Species

Two special-status plant species were determined by the literature review to potentially occur within the study area and are described below. Special-status botanical species were not detected during the field survey. However, the study area provides habitat that could support special-status species. Of the two plant species considered to have a potential to occur within the study area, one was determined to have a moderate potential and the other was determined to be absent. Potential for occurrence was based on habitat, elevation, soil, and proximity to known recorded occurrences of a species. The accounts for species with known occurrences within the Little Buttes USGS 7.5' quadrangle are included below. Their habitat description, status, and potential for occurrence within the survey area are provided in Table 2.

3.2.1 Horn's Milk-vetch

Horn's milk-vetch (*Astragalus hornii* var. *hornii*) is a BLM sensitive species and is included on List 1B.1 of the CNPS online inventory (CNPS 2019). It is a white- or pale-lilac-flowered annual herb in the Pea Family (*Fabaceae*). It ranges from 195 to 2,790 feet in elevation, and blooms from May to October. Horn's milk-vetch is threatened by habitat loss. Although observations of Horn's milk-vetch have been documented within two miles of the study area, the most recent observation is more than 85 years old (CDFW 2019). Suitable habitat for Horn's milk-vetch does not occur within the study area and, therefore, the species is considered to be absent.

3.2.2 Alkali Mariposa Lily

Alkali mariposa lily (*Calochortus striatus*) is a BLM and U.S. Forest Service (USFS) sensitive species and is included on List 1B.2 of the CNPS online Inventory (CNPS 2019). It is a white to lavender-flowered perennial bulbiferous herb in the Lily Family (*Liliaceae*). This species occurs in chenopod scrub, chaparral, Mojavean desert scrub, and meadows and seeps, on alkaline soils. It ranges from 230 to 5,230 feet in elevation, and blooms from April to June. Alkali mariposa lily is threatened by agricultural activities, energy development, urbanization, and off-road vehicle usage. Suitable habitat for this species occurs within the study area, and there are records of occurrences less than one mile of the study area (CDFW 2019). Populations of this species occur within one mile of the study area. Alkali mariposa lily has a moderate potential to occur within the study area, but because the habitat assessments were conducted outside of the appropriate blooming period, it could not be identified as present.

3.3 Non-native Plant Species

A comprehensive plant inventory, including non-native species, was taken during the reconnaissance surveys and is included in Appendix A. Non-native plants are rated by the California Invasive Plant Council (Cal-IPC) as falling into one of three categories (Cal-IPC 2019):

- **High** – These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
- **Moderate** – These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

- **Limited** – These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Some species are not currently rated due to lack of adequate information or lack of significant impacts on native communities.

The non-native plant species that were detected during reconnaissance surveys are rated by Cal-IPC as follows:

- cheat grass (*Bromus tectorum*) – rated as High.
- tamarisk (*Tamarix ramossisima*) – rated as High.
- Black mustard (*Brassica nigra*) – rated at Moderate
- ripgut brome (*Bromus madritensis* ssp. *rubens*) – rated as Moderate
- redstem filaree (*Erodium cicutarium*) – rated as Limited.
- Russian thistle (*Salsola tragus*) – rated as Limited.
- Mediterranean grass (*Schismus barbatus*) – rated as Limited.

TABLE 2 SPECIAL-STATUS PLANT SPECIES AND THEIR POTENTIAL TO OCCUR WITHIN THE BIOLOGICAL STUDY AREA

SPECIES ¹	STATUS ²	HABITAT ²	BLOOMING PERIOD ²	POTENTIAL FOR OCCURRENCE
<i>Astragalus hornii</i> var. <i>hornii</i> Horn's milk-vetch	Fed: None State: None CNPS: 1B.1 BLM: S USFS: None	Annual herb occurring in alkali playa, lake shores, and meadow and seeps. From 195 to 985 feet in elevation.	May – October	Absent. No suitable habitat occurs on site.
<i>Calochortus striatus</i> alkali mariposa lily	Fed: None State: None CNPS: 1B.2 BLM: S USFS: S	Perennial bulbiferous herb occurring in chaparral, chenopod and Mojavean desert scrub, ephemeral washes, and meadows and seeps (alkaline, mesic). From 230 to 5,230 feet in elevation.	April – June	Moderate. Suitable habitat occurs on site, with recent occurrences observed within one mile from the study area.

Notes:

1. Sources of scientific names and common names are: Hickman (1993), CNPS (2019), and CalFlora (2019).
2. Sources of habitat characteristics and flowering times are: CNDDB (CDFW 2019) and CNPS (2019).

CNPS (State Rare Plant Rank)

1B: Considered rare, threatened, or endangered in California and elsewhere.

Threat Ranks/ Decimal notations: A California Native Plant Society extension added to the SRPR

- .1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
- .2 Moderately threatened in California (20-80% occurrences threatened / moderate degree and immediacy of threat)

Bureau of Land Management (BLM)

S: Sensitive species are those species that are designated by the State Director for special management consideration.

U.S. Forest Service (USFS)

S: Sensitive species are those species that are designated by the State Director for special management consideration.

Occurrence Code:

- Moderate:** Species or sign not observed on the site, but conditions suitable for occurrence and/or an historical record exists in the vicinity.
- Absent:** Species or sign not observed on the site, outside of the known range, and conditions unsuitable for occurrence.

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3.4 Special-Status Wildlife Species

A total of nine special-status wildlife species were determined by the literature review to potentially occur within the study area. Of the nine wildlife species considered to have a potential to occur within the vicinity, two were determined to have a high potential for occurrence within the study area, one had a moderate potential, and the rest were determined to have a low potential for occurrence. Their habitat description, status, and potential for occurrence within the study area are provided in Table 3.

The accounts below include species that are determined to have at least a moderate potential to occur at either site, or were observed during the field surveys.

3.4.1 Burrowing Owl

The burrowing owl (*Athene cunicularia*) is a BLM Sensitive Species, CDFW Species of Special Concern, and U.S. Fish and Wildlife Service (USFWS) Bird of Conservation Concern. It typically inhabits lowlands, including those in the Central Valley, northeastern plateau, southeastern deserts, and coastal areas. For shelters, the burrowing owl uses rodent burrows in sparse grassland, desert, and agricultural habitats. Nesting begins in late March and April. Burrowing owls are typically active at dusk and dawn, but can also be active at night.

Suitable habitat occurs within the study area. There are multiple recent sightings of burrowing owl in the vicinity, with one sighting less than half a mile from the study area (CDFW 2019), giving this species a high potential for occurrence.

3.4.2 Swainson's Hawk

Swainson's hawk (*Buteo swainsonii*) is State-listed as Threatened, BLM Sensitive Species, and USFS Sensitive Species, as well as a USFWS Bird of Conservation Concern. Its breeding habitat includes grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural fields and ranches. Swainson's hawk also requires adjacent suitable foraging areas, such as grasslands or alfalfa or grain fields, which support rodent populations. Hawks are restricted to portions of the Central Valley and Great Basin regions where suitable nesting and foraging habitat is still available. The loss of agricultural lands to various residential and commercial developments is a serious threat to this hawk throughout California.

Because its range encompasses the study area, and the presence of suitable habitat, this species may occur within or immediately adjacent to the Project area, although most likely as a migrant passing through. There are multiple recent sightings of Swainson's hawk in the vicinity, with one sighting less than a mile from the study area (CDFW 2019), giving this species a high potential for occurrence.

3.4.3 Mountain Plover

The mountain plover (*Charadrius montanus*) is a California Species of Special Concern. This migratory shorebird winters in California from approximately September through March, preferring chenopod scrub, short grasslands, and newly-plowed and newly sprouting agricultural fields (CDFW 2019). Mountain plover most commonly winters in Central and Imperial Valley, but also winters in agricultural areas in the western Mojave Desert (Shuford and Gardali 2008).

Suitable habitat for wintering mountain plover occurs within the study area, and recent observations of mountain plover have been made within two miles of the Project area, giving this species a moderate potential for occurrence.

TABLE 3 SPECIAL-STATUS WILDLIFE SPECIES AND THEIR POTENTIAL TO OCCUR WITHIN THE BIOLOGICAL STUDY AREA

SPECIES	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE
<i>Anniella pulchra</i> northern California legless lizard	Fed: None State: SSC BLM: None	Occurs in sandy or loose loamy soils under sparse vegetation. Soils with high moisture content are required.	Low. Marginal suitable habitat to support this species occurs within the study area.
<i>Aquila chrysaetos</i> golden eagle	Fed: None State: THR BLM: S	Nests in cliffs or large trees, typically in mountainous regions and in the vicinity of open grassland or oak savanna habitat. Forages in areas of open habitat.	Low. Marginal suitable foraging habitat to support this species occurs within the study area, with records of this species within one mile of the study area (CDFW 2019). There is no nesting habitat within the study area.
<i>Athene cunicularia</i> burrowing owl	Fed: None State: SSC BLM: S	Occurs in open, dry annual or perennial grasslands, deserts, and scrublands with low-growing vegetation. This includes a wide variety of vegetation communities, including coastal prairies, coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, and valley and foothill grasslands. Depends on fossorial mammals for burrows.	High. Suitable habitat available for this species within the study area and in the area immediately surrounding the Project, with records of this species less than 0.5 miles from the study area (CDFW 2019).
<i>Buteo regalis</i> ferruginous hawk	Fed: None State: WL BLM: None	Occurs in Great Basin grassland, Great Basin scrub, pinon and juniper woodlands, and valley and foothill grassland.	Low. Marginal suitable habitat to support this species occurs within the study area.
<i>Buteo swainsoni</i> Swainson's hawk	Fed: None State: THR BLM: S	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, agricultural areas, and ranches. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	High. Suitable habitat available for this species within the study area and in the area immediately surrounding the Project, with records of this species within one mile from the study area (CDFW 2019).
<i>Charadrius montanus</i> mountain plover	Fed: None State: SSC BLM: S	Occurs in chenopod scrub, short grasslands, freshly-plowed fields, newly-sprouting grain fields, and occasionally sod farms. Needs a mixture of short vegetation and bare ground, along with flat topography. Prefers grazed areas and areas with fossorial rodents.	Moderate. Some suitable habitat to support for this species at this site and in the area immediately surrounding the Project, with records of this species within two miles from the study area (CDFW 2019).

SPECIES	STATUS	HABITAT	POTENTIAL FOR OCCURRENCE
<i>Lanius ludovicianus</i> loggerhead shrike	Fed: None State: SSC BLM: None	Open space with patchy shrubs and trees, including desert scrub, agricultural areas, pastoral habitat, and suburban areas.	Low. Marginal suitable habitat to support this species occurs within the study area, with records of observation within four miles.
<i>Taxidea taxus</i> American badger	Fed: None State: SSC BLM: None CA: fur-bearing mammal	Occurs in a wide variety of habitats and vegetation communities but is most abundant in drier, open stages of most shrub, forest, and herbaceous habitats in areas with friable soils. Requires open, uncultivated ground.	Low. Marginal suitable habitat to support this species occurs within the study area, with records of observation within 1.5 miles.
<i>Toxostoma lecontei</i> Le Conte's thrasher	Fed: None State: SSC BLM: None	Occurs primarily in open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats. Commonly nests in dense, spiny shrubs or densely-branched cacti.	Low. Suitable foraging habitat for this species occurs within the study area, with records of observation within four miles, although not recent. There is no nesting habitat within the study area.

Low: Species or sign not observed on the site, but conditions marginal for occurrence.

Moderate: Species or sign not observed on the site, but conditions suitable for occurrence and/or an historical record exists in the vicinity.

High: Species or sign not observed on the site, but reasonably certain to occur on the site based on conditions, species ranges, and recent records.

State status

THR = listed as Threatened under the California Endangered Species Act

SSC = designated as a Species of Concern

WL = Watch List

BLM status

S = designated as a Sensitive species

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4.0 RECOMMENDATIONS

The following recommendations are provided for avoidance and minimization of effects to biological resources:

1. Conduct pre-construction focused floral surveys within the study area to determine presence/absence of special-status plant species determined to have a potential to occur, within the appropriate blooming periods, prior to and as close to the actual construction date as feasible, with focus on the alkali mariposa lily, which blooms from April to June.
2. A qualified biologist(s) will monitor all initial earth-moving and vegetation altering construction activities to ensure that standard and special-status species-specific avoidance and minimization recommendations are adhered to. The monitor will retain stop work authority in the event there is the likelihood of imminent take of special-status species. The biological monitor will conduct a general pre-construction inspection no more than 14 days prior to the start of construction to verify that no special-status species are in the project work area or its buffers. The monitor will also conduct periodic surveys in and around work to verify adherence to any applicable environmental compliance requirements. If the site is adequately fenced off following initial vegetation disturbance, the monitor will only be needed for periodic check-ins.
3. The footprint of disturbance will be minimized to the extent feasible. Access to sites will be via pre-existing access routes, to the greatest extent possible, and the work area boundaries will be delineated with staking, flagging, or other comparable markings to minimize surface disturbance associated with vehicle straying. Signs and/or fencing will be placed around the Project area to restrict access to Project-related vehicles.
4. Conduct pre-construction focused burrowing owl surveys within the Project footprint to determine presence/absence of the species. Surveys will record presence of any other species that might be considered to be of concern. If burrows are found, the appropriate CDFW-recommended buffer or a buffer deemed appropriate by a qualified biologist, will be installed until occupancy status is determined. If the buffer cannot be maintained during the non-breeding season, owls may be evicted from the burrows using accepted methodology as approved by resource agencies. Occupied burrows will not be disturbed during the owl nesting season, February 1 and August 31. Eviction will not occur during the nesting season.
5. If construction occurs between February 15 and August 15, the time period typically referenced in California for the general bird nesting season, pre-construction nesting surveys will be conducted within the Project footprint by a qualified biologist within one week of the start of construction. If no active bird nests are found within this area, no further mitigation is required. If an active nest is found, a 250-foot no disturbance buffer will be instated around the nest if it belongs to a non-listed or migratory bird. If the nest belongs to a listed or fully-protected species, a 500-foot no disturbance buffer will be instated around the nest. Nest buffers may be negotiated and nest removal prior to nesting season may be implemented through discussions with CDFW or other agencies, as applicable.
6. Upon Project completion, any disturbance will be, to the extent practicable in areas not occupied by permanent project facilities, restored to pre-construction conditions. As required, the area of Project-related temporary disturbance will be revegetated (reseeded) to pre-disturbance levels.

7. Only certified weed-free straw and hay bales will be used, as necessary, during construction and weed-free seed for post-construction revegetation.
8. Project-related equipment will be cleaned (pressure wash or compressed air) prior to entering the Project area for the first time to reduce the chance of transporting noxious weed seeds from outside the area.
9. Vehicles and equipment should be maintained and free of leaks. All hazardous material, oil, hydraulic, or other fluid leaks should be contained and cleaned immediately to reduce the risk of negatively impacting water quality.
10. To avoid attracting predators and nuisance species, the Project footprint will be clear of debris, where possible. All food-related trash items will be enclosed in sealed containers and regularly removed from the Project footprint.
11. To the extent practical project activities will avoid evening or night work, when common local wildlife species are most likely to be active.
12. No pets or firearms will be allowed on-site, and no harassment, injuring, or killing of wildlife will be allowed.
13. The potential for fires will be minimized by using shields, mats, or other fire prevention methods when grinding, welding, or conducting any other activities that generate sparks or could otherwise start a fire. Fire extinguishers, water, and shovels will be kept on-site during construction activities.

5.0 REFERENCES

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APPENDIX A PLANT SPECIES OBSERVED DURING THE FIELD SURVEY

SCIENTIFIC NAME	COMMON NAME
DICOTYLEDONS	
APOCYNACEAE	DOGBANE FAMILY
<i>Nerium oleander*</i>	oleander
ASTERACEAE	SUNFLOWER FAMILY
<i>Ambrosia acanthicarpa</i>	annual bur-sage
<i>Baccharis salicifolia</i>	mule fat
<i>Chrysothamnus nauseosus</i>	rubber rabbitbrush
<i>Gutierrezia</i> sp.	matchweed
<i>Helianthus annuus</i>	common sunflower
<i>Lactuca serriola*</i>	prickly lettuce
<i>Lastenia californica</i>	goldfields
BORAGINACEAE	BORAGE FAMILY
<i>Amsinckia</i> sp.	fiddleneck
<i>Amsinckia tessellata</i>	Devils lettuce
<i>Heliotropium curassavicum</i>	salt heliotrope
<i>Pectocarya</i> sp.	pectocarya
BRASSICACEAE	MUSTARD FAMILY
<i>Brassica nigra*</i>	black mustard
<i>Brassica tournefortii*</i>	Sahara mustard
<i>Descurainia pinnata</i>	western tansy-mustard
<i>Sisymbrium altissimum*</i>	tumble mustard
CHENOPODIACEAE	GOOSEFOOT FAMILY
<i>Atriplex semibaccata*</i>	Australian saltbush
<i>Atriplex</i> sp.	saltbush
<i>Salsola tragus*</i>	Russian thistle
EUPHORBIACEAE	SPURGE FAMILY
<i>Eremocarpus setigerus</i>	dove weed
GERANIACEAE	GERANIUM FAMILY
<i>Erodium cicutarium*</i>	red-stemmed filaree
HYDROPHYLLACEAE	WATERLEAF FAMILY
<i>Phacelia fremontii</i>	Fremont's phacelia
POLEMONACEAE	PHLOX FAMILY
<i>Eriastrum densifolium</i>	woollystar
SOLANACEAE	NIGHTSHADE FAMILY
<i>Datura</i> sp.	jimson weed

SCIENTIFIC NAME	COMMON NAME
TAMARICACEAE	TAMARISK FAMILY
<i>Tamarix ramosissima</i> *	Mediterranean tamarisk
ZYGOPHYLLACEAE	CALTROP FAMILY
<i>Larrea tridentata</i>	creosote bush
MONOCOTYLEDONS	
LILIACEAE	LILY FAMILY
<i>Yucca brevifolia</i>	Joshua tree
POACEAE	GRASS FAMILY
<i>Bromus</i> sp.*	brome
<i>Bromus madritensis</i> *	foxtail chess
<i>Bromus tectorum</i> *	cheat grass
<i>Schismus barbatus</i> *	Mediterranean schismus

*non-native species

APPENDIX B WILDLIFE SPECIES OBSERVED DURING THE FIELD SURVEYS

SCIENTIFIC NAME	COMMON NAME	OBSERVATION TYPE
CLASS INSECTA	INSECTS	
POMPIDAE	SPIDER WASPS	
<i>Pepsis</i> sp.	tarantula hawk	O
CLASS REPTILIA	REPTILES	
IGUANIDAE	IGUANID LIZARDS	
<i>Uta stansburiana</i>	common side-blotched lizard	O
TEIIDAE	WHIPTAIL LIZARDS	
<i>Cnemidophorus</i> sp.	whiptail	O
CLASS AVES	BIRDS	
ACCIPITRIDAE	HAWKS, KITES, EAGLES	
<i>Buteo jamaicensis</i>	red-tailed hawk	O
ALAUDIDAE	LARKS	
<i>Eremophila alpestris</i>	horned lark	O, A
COLUMBIDAE	PIGEONS AND DOVES	
<i>Columba livia</i>	mourning dove	O, A
CORVIDAE	JAYS & CROWS	
<i>Corvus corax</i>	common raven	O, A
EMBERIZIDAE	EMBERIZIDS	
<i>Amphispiza belli</i>	sage sparrow	O, A
<i>Zonotrichia leucophrys</i>	white-crowned sparrow	O, A
CLASS MAMMALIA	MAMMALS	
LEPORIDAE	HARES & RABBITS	
<i>Lepus californicus</i>	black-tailed jackrabbit	O, S, T
<i>Sylvilagus audubonii</i>	desert cottontail	O
SCIURIDAE	SQUIRRELS	
<i>Spermophilus</i> sp.	ground squirrel	O, A, B
CANIDAE	WOLVES & FOXES	
<i>Canis latrans</i>	coyote	S, T
<i>Vulpes velox</i>	kit fox	T

O = observed
A = aural
B = burrow
S = scat
T = tracks

APPENDIX C

NOISE AND VIBRATION IMPACTS ASSESSMENT



Technical Memorandum

TO: Kim Quinn
POWER Engineers, Inc.

FROM: Terry A. Hayes Associates Inc.

DATE: November 4, 2019

RE: Rosamond Switching Station Project – Noise and Vibration Impacts Assessment

Introduction

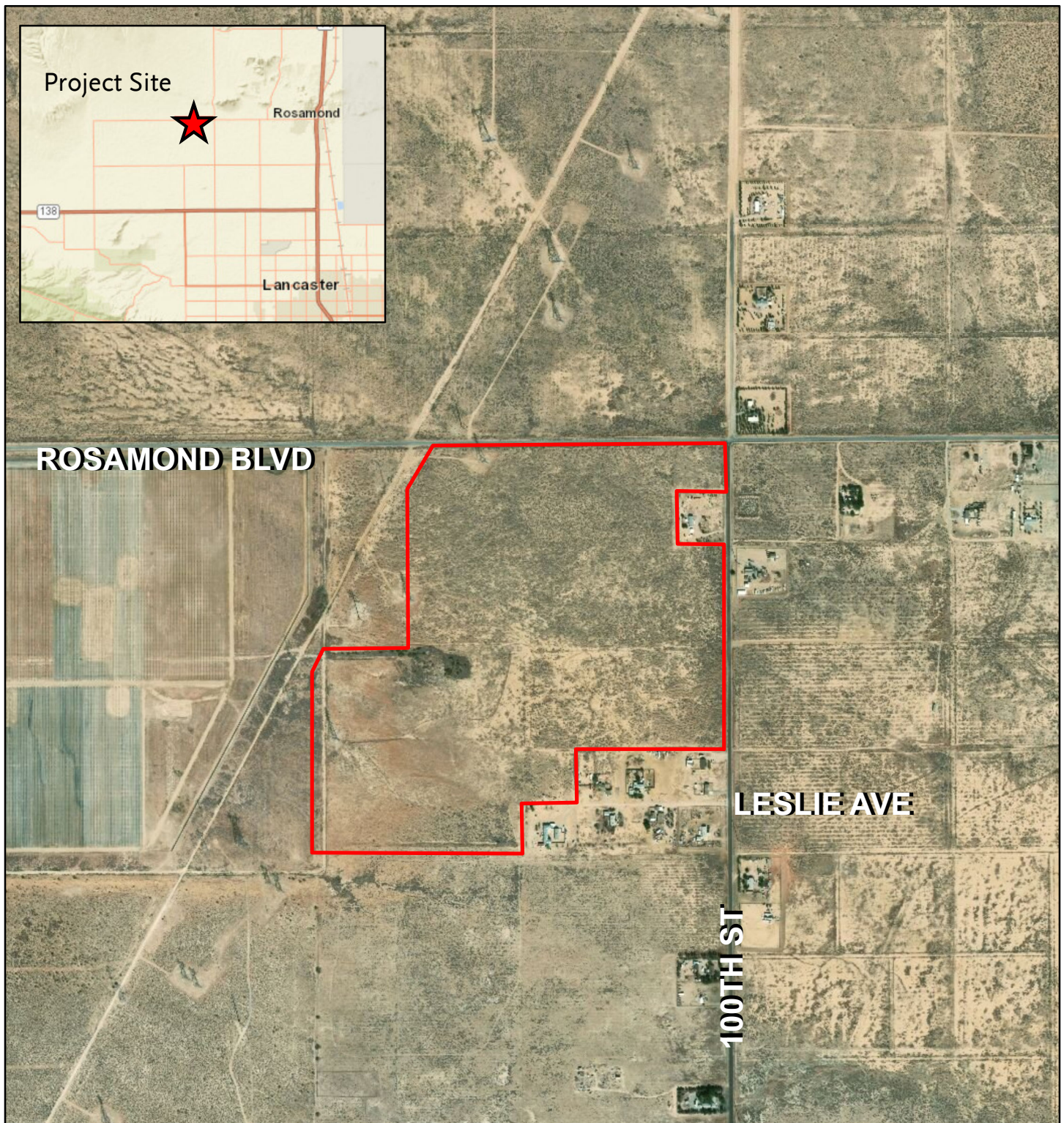
Terry A. Hayes Associates Inc. (TAHA) has completed a noise and vibration impact assessment for the Rosamond Switching Station Project (proposed Project) in accordance with the provisions of the California Environmental Quality Act (CEQA) Statutes and Guidelines.

Project Description

The Los Angeles Department of Water and Power (LADWP) is proposing to construct and operate a new 230 kilovolt (kV) switching station in Kern County, California in the western Antelope Valley on 119.57 acres of land (**Figure 1**). The Project site is bounded on the north by Rosamond Boulevard, and vacant land lies to the east and south. Immediately to the west of the Project site, there are several high voltage transmission lines owned by LADWP and Southern California Edison (SCE). The project site is surrounded by sparsely vegetated vacant or undeveloped lands. The nearest land uses are residences located adjacent to project site the northeast and southeast quadrants. Scattered rural single-family residences are also located approximately 200 to 1,400 feet to the east of the Project site. Other land uses within the vicinity of the site include industrial uses, solar generation facilities, and agricultural plots.

The permanent disturbance within the new station is 1,200 feet in length and 800 feet in width. Two future expansions will occur on the Project site, the first expansion will be on the north side of the new switching station. The total station size will be expanded to 350 feet in length, 350 feet in width for the Flexible Alternating Current Transmission System (FACTS) Device. The second expansion will be on the south side of the new switching station. The total station size will be expanded to 850 feet in length, 850 feet in width for the Battery Energy Storage System (BESS) Device. The Project also includes operation and maintenance of the Rosamond Switching Station. Project activities include installation of electrical structures and equipment for transmission lines, staging areas, new roadway within the station, FACTS Device building, and BESS. All construction activities will occur within the 41-acre area. Existing roads will be used to access the Project site.





Legend

 Project Area

0 375 750 1,500 Feet



LADWP Rosamond Switching Station Project
Noise & Vibration Technical Memorandum

TAHA 2017-082

Power Engineers Inc.

FIGURE 1
REGIONAL AND PROJECT LOCATION

Construction is anticipated to begin in Spring 2020 with active construction activity taking approximately 38 months. Up to 70 construction workers would be working on the proposed Project at any time. Construction equipment would typically include equipment similar graders and excavators, backhoes, drill rigs, water trucks, scrapers, sheep's foot compactors, front end loaders, concrete trucks, trucks and flatbed trailers. Cranes, man-lifts, portable welding units, line trucks, and mechanic trucks will also be required. Temporary construction fencing would be placed around the property boundary or extended area of construction, if necessary. Excavation at the Project site would largely be related to site preparation and would result in a limited number of off-site haul truck trips. Heavy-duty truck trips would include approximately 153 concrete truck trips to the site. Construction details are limited at this time in the planning process and the analysis assumes a maximum of 20 concrete truck trips per day and 10 truck trips per day for the aggregate base.

Noise

This assessment was undertaken to determine whether construction or operation of the proposed Project would have the potential to result in significant environmental impacts related to noise or vibration in the context of the Appendix G Environmental Checklist criteria of the CEQA Guidelines. Implementation of the proposed Project may result in a significant environmental impact related to noise and vibration if the proposed Project would result in:

- a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies;
- b) Generation of excessive ground-borne vibration or ground-borne noise levels;
- c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels;

Background Information

The standard unit of measurement for noise is the decibel (dB). The human ear is not equally sensitive to sound at all frequencies. The A-weighted scale, abbreviated dBA, reflects the normal hearing sensitivity range of the human ear. On this scale, the range of human hearing extends from approximately 3 to 140 dBA. The noise analysis discusses sound levels in terms of Equivalent Noise Level (L_{eq}). L_{eq} is the average noise level on an energy basis for any specific time period. The L_{eq} for one hour is the energy average noise level during the hour. The average noise level is based on the energy content (acoustic energy) of the sound. L_{eq} can be thought of as the level of a continuous noise which has the same energy content as the fluctuating noise level. The equivalent noise level is expressed in units of dBA.

Noise levels decrease as the distance from the noise source to the receiver increases. Noise generated by a stationary noise source, or “point source,” decreases by approximately 6 dBA over hard surfaces (e.g., reflective surfaces such as parking lots or smooth bodies of water) and 7.5 dBA over soft surfaces (e.g., absorptive surfaces such as soft dirt, grass, or scattered bushes and trees) for each doubling of the distance. For example, if a noise source produces a noise level of 89 dBA at a reference distance of 50 feet, then the noise level is 83 dBA at a distance of 100 feet from the noise source, 77 dBA at a distance of 200 feet.

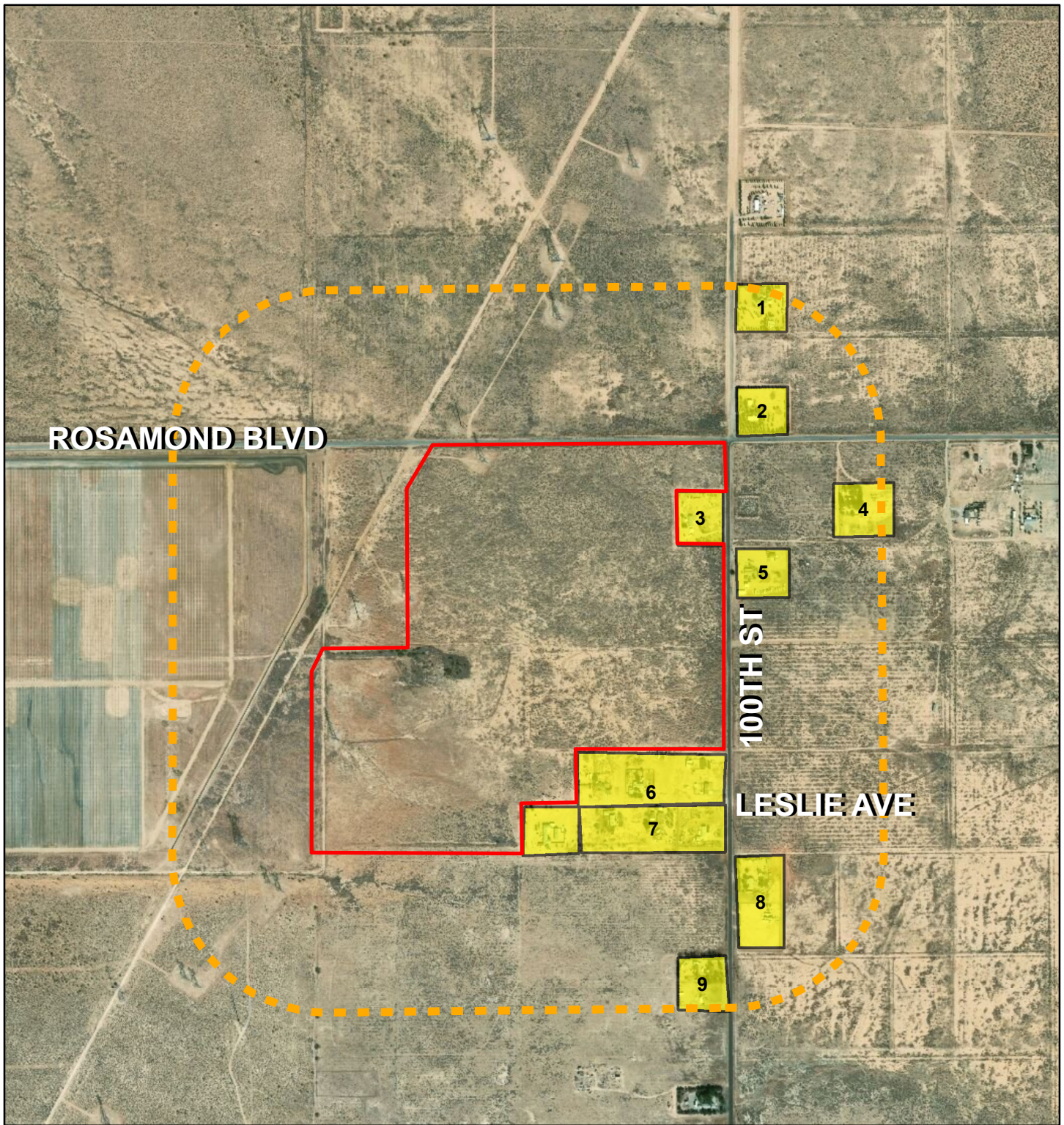
Noise generated by a mobile source decreases by approximately 3 dBA over hard surfaces and 4.8 dBA over soft surfaces for each doubling of the distance. Generally, noise is most audible when the source is in a direct line-of-sight of the receiver. Barriers, such as walls, berms, or buildings that break the line-of-sight between the source and the receiver greatly reduce noise levels from the source since sound can only reach the receiver by bending over the top of the barrier. However, if a barrier is not sufficiently high or long to break the line-of-sight from the source to the receiver, its effectiveness is greatly reduced.

Studies have shown that the smallest perceptible change in sound level for a person with normal hearing sensitivity is approximately 3 dBA. A change of at least 5 dBA would be noticeable and may evoke a community reaction. A 10-dBA increase is subjectively heard as a doubling in loudness and would likely cause a negative community reaction.

Existing Setting and Regulatory Framework

The Project site is located in a rural environment with few substantial sources of noise. It is anticipated that audible noise includes occasional traffic and aircraft flyovers. As shown in **Figure 2**, The nearest land uses are residences located adjacent to project site the northeast and southeast quadrants. Scattered rural single-family residences are also located approximately 200 to 1,400 feet to the east of the Project site. In 2017, TAHA completed a noise and vibration assessment in a similar rural environment for the LADWP Fairmont Treatment Plant Project. The Fairmont Treatment Plant is located approximately 12 miles southwest of the Project site. Those measurements indicate that rural noise levels typically range from 47.7 to 55.1 dBA L_{eq} . It is anticipated that ambient noise levels would be similar at the Project site due to the similar rural environment.

The Kern County Code (Code) establishes noise standards related to construction at the Project site. Section 8.36(h) of the Code establishes prohibitions for construction noise. The Code states that construction activity may occur Mondays through Fridays from 6:00 a.m. to 9:00 p.m. and 8:00 a.m. to 9:00 p.m. on weekends. Construction occurring outside of those hours which would be audible to a person at 150 feet from the construction site at a residence within 1,000 feet of a construction site would be prohibited.



Legend

Project Area
 1,000 Foot Buffer
 Sensitive Receptors

0 375 750 1,500 Feet



LADWP Rosamond Switching Station Project
Noise & Vibration Technical Memorandum

TAHA 2017-082

Power Engineers Inc.

FIGURE 2

SENSITIVE RECEPTORS

Noise and Vibration Impact Assessment

- a) Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies? (Less-than-Significant Impact)*

Construction

Noise impacts from construction of the proposed Project would fluctuate depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers. Construction activities typically require the use of numerous pieces of noise-generating equipment. Typical noise levels from various types of equipment that would be used during construction are listed in **Table 1**. Noise levels from individual pieces of equipment typically are between 67.7 and 82.2 dBA L_{eq} at 50 feet. To more accurately characterize construction-period noise levels, the noise levels shown in **Table 2** take into account the likelihood that multiple pieces of construction equipment would be operating simultaneously and the typical overall noise levels that would be expected for each phase of construction. When considered as an entire process with multiple pieces of equipment, site preparation would generate the loudest noise level of approximately 89 dBA L_{eq} at 50 feet.

TABLE 1: NOISE LEVEL RANGES OF TYPICAL CONSTRUCTION EQUIPMENT	
Construction Equipment	Noise Level at 50 feet (dBA)
All Other Equipment > 5 HP	82.0
Auger Drill Rig	77.4
Backhoe	73.6
Compactor (ground)	76.2
Compressor (air)	73.7
Concrete Mixer Truck	74.8
Concrete Pump Truck	74.4
Crane	72.6
Dozer	77.7
Drum Mixer	77.0
Dump Truck	72.5
Excavator	76.7
Flat Bed Truck	70.3
Front End Loader	75.1
Generator	77.6
Gradall	79.4
Grader	81.0
Man Lift	67.7
Pickup Truck	71.0
Pneumatic Tools	82.2
Pumps	77.9
Scraper	79.6
Welder / Torch	70.0
SOURCE: Federal Highway Administration, <i>Roadway Construction Noise Model</i> , Version 1.1, 2008.	

TABLE 2: TYPICAL OUTDOOR CONSTRUCTION NOISE LEVELS	
Construction Method	Noise Level at 50 feet (dBA, L_{eq})
Ground Clearing	84
Site Preparation	89
Foundations	78
Structural	85
Finishing	89
SOURCE: USEPA, <i>Noise from Construction Equipment and Operations, Building Equipment and Home Appliances</i> , PB 206717, 1971.	

The Project area includes scattered rural residences within 1,000 feet of the active construction zone. **Table 3** shows the anticipated maximum noise levels at these residences. It is anticipated that noise levels would range from 52.8 dBA L_{eq} to 81.5 dBA L_{eq} at nearby residences. Construction noise would be audible at the nearest residences, particularly those to the south of the Project site, although equipment would primarily operate in the center of the Project site at Project components and the noise levels below represent a conservative level of analysis. Construction activity may occur Mondays through Fridays from 6:00 a.m. to 9:00 p.m. and 8:00 a.m. to 9:00 p.m. on weekends. Project construction would occur within these hours and would not require nighttime or early morning construction. Kern County has not established a quantitative noise threshold to determine noise impacts at sensitive receptors, but instead imposes time restrictions for construction. The proposed Project would be consistent with Kern County standards and would not significantly increase noise levels at nearby residences. Therefore, the proposed Project would result in a less-than-significant impact related to on-site construction noise. No mitigation measures would be necessary.

TABLE 3: TYPICAL CONSTRUCTION NOISE LEVELS AT RECEPTORS			
Key to Figure 2	Sensitive Receptor	Distance (feet) /a/	Maximum Noise Level (dBA)
1	Residence on 100 th St. north of Rosamond Blvd.	1,000	56.5
2	Residence on 100 th St. north of Rosamond Blvd.	300	69.5
3	Residence on 100 th St. south of Rosamond Blvd.	100	81.5
4	Residence on Rosamond Blvd. east of 100 th St.	920	57.4
5	Residence on 100 th St. south of Rosamond Blvd.	200	73.9
6	Residences on Leslie Ave.	150	77.1
7	Residences on Leslie Ave.	500	64.0
8	Residence on 100 th St. south of Leslie Ave.	1,200	54.5
9	Residence on 100 th St. south Leslie Ave.	1,400	52.8
/a/ Measured from the project site to the nearest structure. SOURCE: TAHA, 2019.			

Operations

Operational sources of noise would include mechanical equipment and periodic maintenance activities. On-site operational noise would be limited to low humming sounds from equipment, which would not be audible past the Project site boundary. Noise generated at the Project site would not be audible at the nearest residence, which is approximately 100 feet away. Therefore, the proposed Project would result in a less-than-significant impact related to operational noise.

Mitigation Measures

No significant impacts have been identified related to construction or operational noise. Therefore, no mitigation measures are required.

b) Would the proposed Project result in generation of excessive ground-borne vibration or ground-borne noise levels? (Less-than-Significant Impact)

Construction

Construction activity can generate varying degrees of vibration, depending on the procedure and equipment. Operation of construction equipment generates vibrations that spread through the ground and diminish in amplitude with distance from the source. The effect on buildings located in the vicinity of a construction site often varies depending on soil type, ground strata, and construction characteristics of the receiver building(s). The results from vibration can range from no perceptible effects at the lowest vibration levels, to low rumbling sounds and perceptible vibration at moderate levels, and to slight damage at the highest levels. In most cases, the primary concern regarding construction vibration relates to damage.

The FTA provides vibration levels for various types of construction equipment with an average source level reported in terms of velocity.¹ Construction activity would utilize equipment that is best characterized in **Table 4** by large bulldozers. A large bulldozer produces a vibration level of 0.089 inches per second at 25 feet. Vibration is a localized event typically perceptible within 25 feet or less from construction equipment. The nearest receptor is located approximately 100 feet away and vibration generated at the Project site would not be perceptible at this land use. The vibration level would be less than 0.01 inches per second. Therefore, the proposed Project would result in a less-than-significant impact related to on-site construction vibration. No mitigation measures would be necessary.

TABLE 4: VIBRATION LEVELS FOR CONSTRUCTION EQUIPMENT	
Equipment	Vibration Level at 25 feet (Inches/Second)
Large Bulldozer	0.089
Loaded Trucks	0.076
Small Bulldozer	0.003
SOURCE: FTA, <i>Transit Noise and Vibration Impact Assessment</i> , May 2006.	

Operations

The proposed Project would not include significant sources of vibration. Mechanical equipment and associated maintenance activities would not generate perceptible vibration beyond the Project site. Therefore, the proposed Project would result in a less-than-significant impact related to operational vibration. No mitigation measures would be necessary.

Mitigation Measures

No significant impacts have been identified related to construction or operational vibration. Therefore, no mitigation measures are required.

¹Federal Transit Administration, *Transit Noise and Vibration Impact Assessment*, May 2006.

- c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels? (No Impact)*

The Project site is not located within an airport land use plan or is it located two miles of a public airport or private airstrip. Therefore, no impact related to airport or airstrip noise would occur.

Mitigation Measures

No significant impacts have been identified related to the proposed Project. Therefore, no mitigation measures are required.

References

California Department of Transportation, *Technical Noise Supplement to the Traffic Noise Analysis Protocol*, September 2013.

Cowan, James P., *Handbook of Environmental Acoustics*, 1994.

Federal Highway Administration, *Roadway Construction Noise Model*, Version 1.1, 2008.

Federal Transit Administration (FTA), *Transit Noise and Vibration Impact Assessment*, September 2018.

Kern County Code, *Section 8.36 (h)*, May 10, 2018.

Kern County General Plan, *Noise Element*, September 22, 2009.

U.S. Environmental Protection Agency (USEPA), *Noise from Construction Equipment and Operations, Building Equipment and Home Appliances*, PB 206717, 1971.

APPENDIX D
TRAFFIC STUDY

Traffic Study for LADWP Rosamond Switching Station

November 6, 2019

Prepared For:

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JB71216



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ATTACHMENT A - STUDY ROADWAY SEGMENT 24-HOUR TRAFFIC COUNT SUMMARIES

1. Introduction

The purpose of this traffic study is to assess the traffic impacts on the surrounding roadway system of construction activities and post-construction operations for the proposed City of Los Angeles Department of Water and Power (LADWP) Rosamond Switching Station (Project). The report was prepared while under contract for POWER Engineers, Inc. for inclusion in the environmental documentation.

A. Project Location

The Project would be constructed adjacent to the LADWP right-of-way (ROW) for the Barren Ridge – Haskell Canyon power transmission corridor. The proposed Project site is located on the south side of Rosamond Boulevard in unincorporated Kern County, approximately three miles north of the Los Angeles County border.

Direct access to the site is provided by Rosamond Boulevard, an east-west thoroughfare that borders the north side of the property and has a full-access interchange with State Highway 14 (SR-14), approximately eight miles east of the Project site.

B. Project Description

LADWP proposes to construct and operate the new 230 kilovolt (kV) Rosamond Switching Station (the Project). The Project would be constructed adjacent to the LADWP right-of-way for the Barren Ridge – Haskell Canyon (BR-HC) 230 kV Transmission Lines 1, 2, and 3 and would be located approximately 30 miles south of the Barren Ridge Switching Station. The construction of the proposed Project would be located on LADWP-owned land of 120 acres in size. The final configuration of the station needs to accommodate reactive compensation equipment and existing and planned renewable energy interconnections.

Site Access

Direct vehicular access to the Project site during construction and in the operations period would be provided on Rosamond Blvd.

Construction Duration and Intensity

Construction of the proposed Project would occur over an approximate 38-month period, planned by LADWP to start in the year 2020.

The Project construction activities would generate additional vehicle trips in the immediate area, based on necessary truck hauling/delivery trips and the construction employee population.

Off-site dirt hauling truck trips or materials delivery trips are anticipated to be extremely limited. Hauling truck trips are anticipated to occur only for a short duration during site clearing. For concrete deliveries, the calculated trip generation reflects anticipated weekly concrete truck traffic. The peak construction employee population and related vehicle trips was also included.

Operations Phase Traffic

The Project once constructed would generally be in operations 24 hours per day, 7 days per week, but it will not require a regular daily workforce. Maintenance and operations workforce would not generate a significant number of trips that would create impacts on the local transportation network or otherwise substantially affect levels of service in the area. Consequently, operations period trip generation is not discussed further in this report.

C. Project Study Area

This study quantitatively assesses Project construction impacts on roadway segments on the construction truck and employee vehicle trip route. Roadway segment counts were compiled from counts conducted along Rosamond Boulevard, between the Project site and the SR-14 freeway, conducted for this report. The following are the study roadway segments included in the traffic impact analysis:

1. Rosamond Blvd, east of 100th St
2. Rosamond Blvd, east of 55th St
3. Rosamond Blvd, west of 25th St

The daily traffic count summaries collected for these study roadway segments are provided in Attachment A. These volumes are analyzed in Section 4 of this report.

D. Analysis Methodology

KOA analyzed the trip distribution, trip assignment, and daily roadway volumes for the designated study area. In the sections that follow, impacts of the construction of the proposed Project on study area roadways are discussed. The analysis is based on the impacts of Project during the peak of construction activity.

Project construction activities would peak in 2022. This year was defined as the future analysis year, because it represents the period of highest combined construction truck and worker traffic.

2. Existing Conditions

The following describes the study area, along the primary routes to and from the Project site.

Direct vehicular access to the Project site during construction would be provided on Rosamond Boulevard. Adjacent to the Project site, this roadway is a two-lane paved roadway with a striped centerline and a posted speed limit of 45 mph. The shoulders are soft (no curbs, dirt graded areas on each side).

To the west of the intersection with 35th Street, Rosamond Boulevard transitions into a four-lane roadway, with that configuration continuing to the east from that point. There is a center striped two-way left-turn lane. The posted speed limit is also 45 mph in this area.

In the vicinity of the SR-14 interchange, the roadway has a posted speed limit of 35 mph.

3. Project Construction Trips

This section focuses on the definition of construction truck and employee vehicle trip total that are expected to occur during the peak period of Project construction. The distribution and assignment of those trips to the study area roadway network is also discussed here.

A. Project Trip Generation Methodology

Project trip generation calculations included construction truck trip estimates and construction employee vehicle trips. The trip generation totals were determined based on the period which would generate the highest number of combined trips for the Project. Truck volumes were multiplied by a Passenger Car Equivalency (PCE) factor of 2.5 to estimate the real effect of total Project, consistent with truck studies in the area.

Although some carpooling would likely occur during Project construction, trip generation calculations conservatively assumed that each employee would commute in a single personal vehicle. To provide a conservative analysis, the total number of trips analyzed represents the highest trips generated by both construction employees and trucks.

B. Trip Generation Totals

The total daily Project trips defined by Table 1 represent one-way inbound and outbound trips by both the construction personnel vehicles and construction trucks. Foundation work on the project would be the most intense construction period, with 153 concrete truck trips to and from the site over a 180-day working period. Trash haul trucks and delivery trucks would add additional trips.

The construction daily trip numbers were based on the estimated peak day of construction, based on these totals: The peak day truck trip totals would be up to 10 concrete trucks, four trash trucks, and four delivery trucks in use at the peak period of construction, or 18 trucks. Each truck was assumed to make two round trips per day.

- 36 daily peak-period truck round trips
- 70 construction employees on-site

The 36 daily truck trips are round trips, so those were multiplied by two, with a total of 72 one-way trips. Those trips were then multiplied by a Passenger Car Equivalency (PCE) rate of 2.5, consistent with area traffic models, with a total PCE trip number of 180.

Table 1 – Project Construction Weekday Trip Generation

TRIP GENERATION	AVERAGE DAILY PCE TRIPS		
	Trucks*	Employee	Total
<i>Field Personnel</i>	0	140	140
<i>Construction Truck</i>	180	0	180
TOTAL TRIPS	180	140	320

* Truck trips include a Passenger Car Equivalency (PCE) factor of 2.5.

During the peak period of construction, the Project site is estimated to generate a weekday daily total of 320 passenger car-equivalent trips.

This total daily number of trips is included in the analysis of the daily capacity of the affected roads while also accounting for existing traffic volumes. Peak-hour trips related to construction (i.e., during the morning and evening period when workers would be arriving and departing the site) were not considered because there is no discernable peak traffic period in the vicinity of the Project site.

C. Project Trip Distribution

Construction employee and truck vehicle trip patterns were based on the local roadway network that would provide primary access to the project site.

Rosamond Blvd. has a full-access interchange with the SR-14 freeway to the east of the Project site. Project construction-period traffic would use Rosamond Blvd. to access the regional highway network. The analyzed roadway segments were therefore along Rosamond Boulevard, on two-lane and four-lane portions of the roadway, between the Project site and SR-14. All of the Project-generated trips were assumed to travel across all of the analyzed study roadway segments.

4. Project Impacts Analysis

A. Roadway Impact Analysis

As both existing and future projected volumes at the analyzed roadway segments are very low and do not approach the capacities of the roadways, this analysis focuses on daily volumes.

The tables below provide a comparison of the analyzed existing and future volumes with and without the Project, for the study roadway segments. Comparisons to the total roadway capacity are provided, based on the lane configuration of the roadways, and daily volume capacities generally defined by the Highway Capacity Manual that are 10,000 vehicles per lane for major roadways.

Table 2 provides a Project volume analysis based on the existing period analysis, included here based on CEQA precedence that project impact analyses should include a scenario without future estimated traffic growth.

**Table 2 – Project Study Roadway Segment
Existing Volumes Analysis**

Roadway Segment	Existing Daily Volumes	Daily Construction Trips	Existing with Construction	Roadway Capacity
Rosamond Blvd east of 100th St W	1,226	320	1,546	20,000
Rosamond Blvd east of 50th St W	6,297	320	6,617	20,000
Rosamond Blvd west of 25th St W	18,651	320	18,971	40,000

Table 3 provides a Project volume analysis at the roadway segments based on a future volume analysis. Future year-2022 volumes were defined by multiplying the existing year-2019 volumes by an ambient growth rate for the area defined by modeled sub-regional analysis output within the Metro Congestion Management Program (CMP).

**Table 3 – Project Study Roadway Segment
Future Volumes Analysis**

Roadway Segment	Existing Daily Volumes	Future 2022 without Construction	Daily Construction Trips	Future 2022 with Construction	Roadway Capacity
Rosamond Blvd east of 100th St W	1,226	1,276	320	1,596	20,000
Rosamond Blvd east of 50th St W	6,297	6,553	320	6,873	20,000
Rosamond Blvd west of 25th St W	18,651	19,408	320	19,728	40,000

For the remainder of the construction period, construction traffic volumes would decline from the peak levels analyzed in these tables.

The roadway capacities of the roadway segments range from 20,000 to 40,000 vehicles per day. The roadway segments analyzed here would be operating in the range of 1,596 to 19,728 total vehicles per day based on the construction period numbers in Table 2 and Table 3.

On all of the roadway study segments, adequate capacity would remain during the construction period. At least half of the roadway capacity would remain. During the other non-peak months of the overall construction schedule, traffic volumes would decline from these peak levels.

The proposed Project would not create any significant impacts at the analyzed locations.

B. VMT Metrics Considerations

California Environmental Quality Act (CEQA) guidelines have recently changed to require vehicle miles traveled (VMT) metrics in CEQA transportation analysis efforts and not level of service (LOS). LOS metrics can continue to be used under local agency review of traffic circulation, but automobile delay cannot be the determinant of impacts.

VMT analysis is required under CEQA for review of impacts that could be caused by development projects. VMT metrics are not an appropriate measurement of project construction activity, however. VMT data focuses on trip type, automobile use, transit use, walking and bicycling, and general auto trip reduction qualities of development and the management of travel to and from development sites. As project construction activities involve necessary travel to and from the site by construction employees and the necessary use of construction truck delivery and hauling operations, VMT is not an appropriate analysis tool and has been excluded from this analysis.

ATTACHMENT A –
STUDY ROADWAY SEGMENT 24-HOUR TRAFFIC COUNT SUMMARIES

Tuesday, May 22, 2018

CITY: Rosamond

PROJECT: JB71216

ADT1 Rosamond east of 100th.

Prepared by: Field Data Services of Arizor

Prepared by AimTD LLC tel. 714 253 7888

AM Period	NB		SB		EB		WB		PM Period		NB		SB		EB		WB				
0:00	0		0		0		1		12:00		0		0		6		10				
0:15	0		0		0		0		12:15		0		0		4		11				
0:30	0		0		0		0		12:30		0		0		6		4				
0:45	0	0	0	0	0	0	0	1	1	12:45	0	0	0	0	3	19	3	28	47		
1:00	0		0		6		1		13:00		0		0		13		3				
1:15	0		0		0		0		13:15		0		0		10		7				
1:30	0		0		2		1		13:30		0		0		3		7				
1:45	0	0	0	0	1	9	0	2	11	13:45	0	0	0	0	5	31	3	20	51		
2:00	0		0		0		0		14:00		0		0		10		6				
2:15	0		0		0		0		14:15		0		0		8		5				
2:30	0		0		1		0		14:30		0		0		7		3				
2:45	0	0	0	0	1	2	0	0	2	14:45	0	0	0	0	8	33	3	17	50		
3:00	0		0		1		0		15:00		0		0		7		3				
3:15	0		0		1		0		15:15		0		0		9		6				
3:30	0		0		2		1		15:30		0		0		11		8				
3:45	0	0	0	0	0	4	2	3	7	15:45	0	0	0	0	9	36	5	22	58		
4:00	0		0		2		2		16:00		0		0		23		6				
4:15	0		0		0		4		16:15		0		0		72		4				
4:30	0		0		0		4		16:30		0		0		77		5				
4:45	0	0	0	0	3	5	7	17	22	16:45	0	0	0	0	35	207	8	23	230		
5:00	0		0		0		23		17:00		0		0		18		4				
5:15	0		0		1		71		17:15		0		0		14		4				
5:30	0		0		3		91		17:30		0		0		14		3				
5:45	0	0	0	0	0	4	39	224	228	17:45	0	0	0	0	13	59	5	16	75		
6:00	0		0		7		17		18:00		0		0		6		3				
6:15	0		0		10		9		18:15		0		0		3		4				
6:30	0		0		3		16		18:30		0		0		3		3				
6:45	0	0	0	0	3	23	13	55	78	18:45	0	0	0	0	8	20	3	13	33		
7:00	0		0		6		12		19:00		0		0		3		2				
7:15	0		0		3		11		19:15		0		0		3		2				
7:30	0		0		0		9		19:30		0		0		3		4				
7:45	0	0	0	0	2	11	11	43	54	19:45	0	0	0	0	2	11	1	9	20		
8:00	0		0		3		5		20:00		0		0		6		3				
8:15	0		0		5		6		20:15		0		0		1		4				
8:30	0		0		8		3		20:30		0		0		2		4				
8:45	0	0	0	0	3	19	7	21	40	20:45	0	0	0	0	2	11	2	13	24		
9:00	0		0		8		1		21:00		0		0		3		3				
9:15	0		0		7		6		21:15		0		0		0		5				
9:30	0		0		10		5		21:30		0		0		1		2				
9:45	0	0	0	0	8	33	8	20	53	21:45	0	0	0	0	0	4	0	10	14		
10:00	0		0		6		6		22:00		0		0		9		4				
10:15	0		0		13		4		22:15		0		0		0		0				
10:30	0		0		11		3		22:30		0		0		2		2				
10:45	0	0	0	0	5	35	4	17	52	22:45	0	0	0	0	1	12	0	6	18		
11:00	0		0		11		5		23:00		0		0		0		1				
11:15	0		0		5		7		23:15		0		0		1		1				
11:30	0		0		6		8		23:30		0		0		0		2				
11:45	0	0	0	0	9	31	0	20	51	23:45	0	0	0	0	2	3	0	4	7		
Total Vol.					176		423		599							446		181		627	

Daily Totals

NB	SB	EB	WB	Combined
		622	604	1226

AM

PM

Split %	29.4%	70.6%	48.9%	71.1%	28.9%	51.1%
Peak Hour	10:15	5:00	5:15	16:00	12:00	16:00
Volume	40	224	229	207	28	230
P.H.F.	0.77	0.62	0.61	0.67	0.64	0.70

Tuesday, May 22, 2018

CITY: Rosamond

PROJECT: JB71216

ADT2 Rosamond east of 55th.

Prepared by: Field Data Services of Arizor

Prepared by AimTD LLC tel. 714 253 7888

AM Period	NB		SB		EB		WB		PM Period		NB		SB		EB		WB						
0:00	0		0		4		5		12:00	0		0		0		42		37					
0:15	0		0		3		4		12:15	0		0		0		29		46					
0:30	0		0		2		2		12:30	0		0		0		30		34					
0:45	0	0	0	0	0	9	2	13	22	12:45	0	0	0	0	0	49	150	43	160	310			
1:00	0		0		2		1		13:00	0		0		0		48		38					
1:15	0		0		1		2		13:15	0		0		0		41		44					
1:30	0		0		1		2		13:30	0		0		0		36		45					
1:45	0	0	0	0	1	5	6	11	16	13:45	0	0	0	0	0	38	163	35	162	325			
2:00	0		0		3		2		14:00	0		0		0		41		41					
2:15	0		0		1		0		14:15	0		0		0		51		55					
2:30	0		0		2		1		14:30	0		0		0		51		70					
2:45	0	0	0	0	2	8	1	4	12	14:45	0	0	0	0	0	42	185	83	249	434			
3:00	0		0		1		5		15:00	0		0		0		76		86					
3:15	0		0		4		3		15:15	0		0		0		102		54					
3:30	0		0		8		2		15:30	0		0		0		44		56					
3:45	0	0	0	0	10	23	6	16	39	15:45	0	0	0	0	0	60	282	52	248	530			
4:00	0		0		11		5		16:00	0		0		0		56		59					
4:15	0		0		3		10		16:15	0		0		0		76		42					
4:30	0		0		8		11		16:30	0		0		0		87		60					
4:45	0	0	0	0	17	39	11	37	76	16:45	0	0	0	0	0	54	273	65	226	499			
5:00	0		0		6		26		17:00	0		0		0		70		60					
5:15	0		0		13		59		17:15	0		0		0		90		81					
5:30	0		0		15		52		17:30	0		0		0		66		66					
5:45	0	0	0	0	37	71	26	163	234	17:45	0	0	0	0	0	59	285	53	260	545			
6:00	0		0		31		28		18:00	0		0		0		58		42					
6:15	0		0		39		26		18:15	0		0		0		37		48					
6:30	0		0		29		27		18:30	0		0		0		47		41					
6:45	0	0	0	0	60	159	42	123	282	18:45	0	0	0	0	0	33	175	40	171	346			
7:00	0		0		78		58		19:00	0		0		0		28		31					
7:15	0		0		82		60		19:15	0		0		0		28		41					
7:30	0		0		54		64		19:30	0		0		0		31		42					
7:45	0	0	0	0	44	258	55	237	495	19:45	0	0	0	0	0	30	117	27	141	258			
8:00	0		0		43		67		20:00	0		0		0		19		35					
8:15	0		0		66		88		20:15	0		0		0		27		34					
8:30	0		0		113		119		20:30	0		0		0		22		25					
8:45	0	0	0	0	46	268	30	304	572	20:45	0	0	0	0	0	15	83	32	126	209			
9:00	0		0		26		26		21:00	0		0		0		16		20					
9:15	0		0		38		18		21:15	0		0		0		22		26					
9:30	0		0		48		20		21:30	0		0		0		20		20					
9:45	0	0	0	0	36	148	32	96	244	21:45	0	0	0	0	0	11	69	15	81	150			
10:00	0		0		38		28		22:00	0		0		0		6		19					
10:15	0		0		28		29		22:15	0		0		0		7		10					
10:30	0		0		29		31		22:30	0		0		0		10		9					
10:45	0	0	0	0	41	136	28	116	252	22:45	0	0	0	0	0	6	29	10	48	77			
11:00	0		0		39		37		23:00	0		0		0		10		3					
11:15	0		0		39		38		23:15	0		0		0		5		6					
11:30	0		0		35		40		23:30	0		0		0		2		13					
11:45	0	0	0	0	56	169	40	155	324	23:45	0	0	0	0	0	2	19	5	27	46			
Total Vol.					1293	1275				2568					1830				1899				3729

Daily Totals

NB	SB	EB	WB	Combined
		3123	3174	6297

AM

PM

Split %	50.4%	49.6%	40.8%	49.1%	50.9%	59.2%
Peak Hour	6:45	7:45	7:45	16:30	14:15	16:30
Volume	274	329	595	301	294	567
P.H.F.	0.84	0.69	0.64	0.84	0.85	0.83

Tuesday, May 22, 2018

CITY: Rosamond

PROJECT: JB71216

ADT3 Rosamond west of 25th.

Prepared by: Field Data Services of Arizor

Prepared by AimTD LLC tel. 714 253 7888

AM Period	NB	SB	EB	WB	PM Period	NB	SB	EB	WB
0:00	0	0	12	12	12:00	0	0	105	108
0:15	0	0	3	24	12:15	0	0	72	121
0:30	0	0	5	9	12:30	0	0	102	115
0:45	0	0	5	25	12:45	0	0	110	389
			14	59				134	478
				84					867
1:00	0	0	6	12	13:00	0	0	109	156
1:15	0	0	3	16	13:15	0	0	134	138
1:30	0	0	5	7	13:30	0	0	185	132
1:45	0	0	4	18	13:45	0	0	132	560
			11	46				140	566
				64					1126
2:00	0	0	4	9	14:00	0	0	108	167
2:15	0	0	4	9	14:15	0	0	149	165
2:30	0	0	10	8	14:30	0	0	212	145
2:45	0	0	4	22	14:45	0	0	143	612
			6	32				172	649
				54					1261
3:00	0	0	5	17	15:00	0	0	111	174
3:15	0	0	20	6	15:15	0	0	186	211
3:30	0	0	30	9	15:30	0	0	127	189
3:45	0	0	43	98	15:45	0	0	159	583
			9	41				234	808
				139					1391
4:00	0	0	45	8	16:00	0	0	122	230
4:15	0	0	50	12	16:15	0	0	160	202
4:30	0	0	58	15	16:30	0	0	147	219
4:45	0	0	59	212	16:45	0	0	151	580
			23	58				234	885
				270					1465
5:00	0	0	88	26	17:00	0	0	159	268
5:15	0	0	103	68	17:15	0	0	139	275
5:30	0	0	121	27	17:30	0	0	133	237
5:45	0	0	137	449	17:45	0	0	130	561
			40	161				213	993
				610					1554
6:00	0	0	120	43	18:00	0	0	128	207
6:15	0	0	175	45	18:15	0	0	122	197
6:30	0	0	202	69	18:30	0	0	94	160
6:45	0	0	179	676	18:45	0	0	106	450
			108	265				157	721
				941					1171
7:00	0	0	251	182	19:00	0	0	89	145
7:15	0	0	313	212	19:15	0	0	86	142
7:30	0	0	269	118	19:30	0	0	60	119
7:45	0	0	166	999	19:45	0	0	67	302
			144	656				129	535
				1655					837
8:00	0	0	140	136	20:00	0	0	79	116
8:15	0	0	140	149	20:15	0	0	55	125
8:30	0	0	163	108	20:30	0	0	76	98
8:45	0	0	164	607	20:45	0	0	62	272
			81	474				97	436
				1081					708
9:00	0	0	112	61	21:00	0	0	63	98
9:15	0	0	105	69	21:15	0	0	40	99
9:30	0	0	127	88	21:30	0	0	23	61
9:45	0	0	113	457	21:45	0	0	34	160
			99	317				68	326
				774					486
10:00	0	0	119	84	22:00	0	0	35	73
10:15	0	0	116	85	22:15	0	0	22	53
10:30	0	0	97	82	22:30	0	0	18	53
10:45	0	0	101	433	22:45	0	0	22	97
			87	338				35	214
				771					311
11:00	0	0	98	112	23:00	0	0	11	37
11:15	0	0	94	114	23:15	0	0	16	40
11:30	0	0	96	108	23:30	0	0	6	36
11:45	0	0	119	407	23:45	0	0	11	44
			112	446				21	134
				853					178

Total Vol.

4403

2893

7296

Daily Totals

NB

SB

EB

WB

Combined

9013

9638

18651

AM

PM

Split %

60.3%

39.7%

39.1%

40.6%

59.4%

60.9%

Peak Hour

6:45

7:00

7:00

14:30

16:45

16:45

Volume

1012

656

1655

652

1014

1596

P.H.F.

0.81

0.77

0.79

0.77

0.92

0.93

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